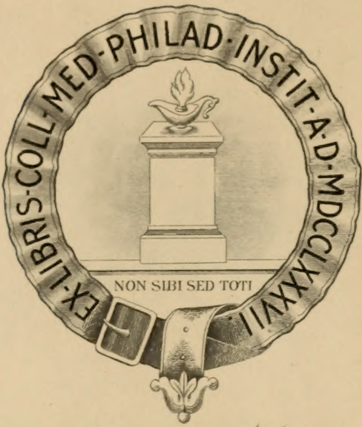
86500



EX·LIBRIS·COLL·MED·PHILAD·INSTIT·A·D·MDCCLXXXVII

NON SIBI SED TOTI

Class ______ No. ______

IN EXCHANGE.

2 75

Compl. in 11 nos. complete

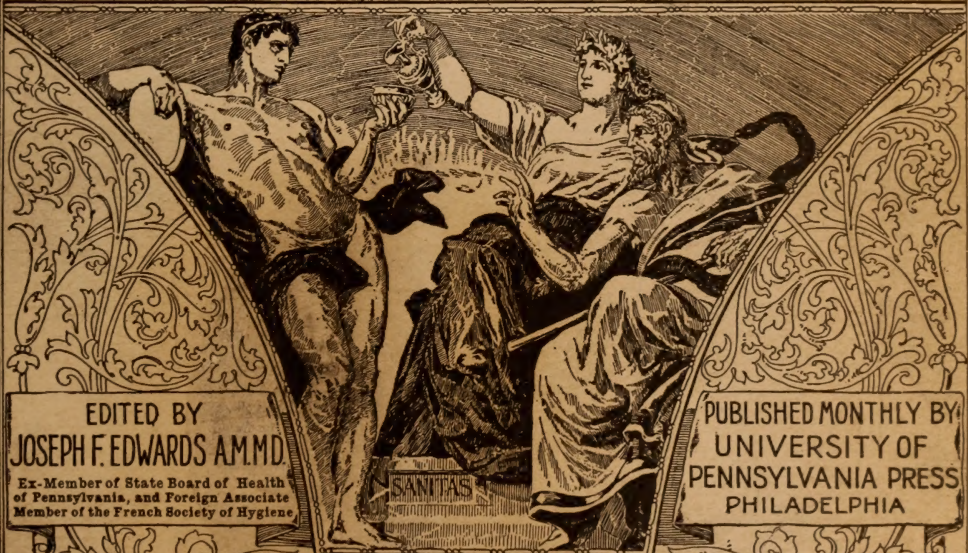
incl. in fol.

Vol. XII. JANUARY 1897 No. 1.

THE ANNALS OF HYGIENE

A JOURNAL OF HEALTH

PHILADELPHIA



EDITED BY
JOSEPH F. EDWARDS A.M. M.D.
Ex-Member of State Board of Health of Pennsylvania, and Foreign Associate Member of the French Society of Hygiene

PUBLISHED MONTHLY BY
UNIVERSITY OF
PENNSYLVANIA PRESS
PHILADELPHIA

$2.00 PER YEAR
IN ADVANCE
SINGLE No 25c

Publication Office, 716 Filbert Street, Philadelphia.

CAMDEN BROS. PHILA.

PRINTED BY J. B. LIPPINCOTT COMPANY.
Entered at the Post-Office at Philadelphia and admitted for transmission through the mails at second-class rates.

ANNALS OF SURGERY

ANNALS OF SURGERY

A MONTHLY

Review of Surgical Science and Practice.

EDITED BY

L. S. PILCHER, A.M., M.D.
(Of Brooklyn, U.S.A.);

J. WILLIAM WHITE, M.D.
(Of Philadelphia, U.S.A.);

WILLIAM MACEWEN, M.D.
(Of Glasgow);

W. H. A. JACOBSON, M.Ch.
(Of London).

144 Pages, with Illustrations of Important Subjects in Each Number, Making Two Handsome Volumes Each Year

CONTAINS ORIGINAL MEMOIRS, TRANSACTIONS OF NEW YORK SURGICAL SOCIETY, TRANSACTIONS OF THE SECTION ON GENERAL SURGERY OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA, EDITORIAL ARTICLES, INDEX OF SURGICAL PROGRESS, BOOK REVIEWS, ETC., ETC.

Every Physician Should Subscribe.

It is the only journal of high grade published in the English language, devoted exclusively to presenting current work in the science and art of Surgery.

The names of its editors are a sufficient guarantee for the sterling character of its contents.

Its illustrations of important subjects are an important feature.

SUBSCRIPTION, $5.00 PER YEAR.

PUBLISHED BY

UNIVERSITY OF PENNSYLVANIA PRESS,

716 Filbert Street, Philadelphia, Pa.

complete in 11 nos.

THE
ANNALS OF HYGIENE
PHILADELPHIA
VOL. XII NO. 1

COMMUNICATIONS.

A Plea for Public Baths.

BY DAVID WARMAN, M.D.,

Trenton, N, J.

A MOST striking paradox in history is presented by the economic position of the public bath at the present time. The vast progress which has characterized every effort for the improvement of the condition of the human race in modern times is the boast of historians and political economists.

Especial emphasis, and justly, too, is laid upon the immense strides towards the equalization of political rights among the classes; and upon the movements for ameliorating the condition of that portion of our community which is waging an unequal struggle for existence, and which, therefore, claims the sympathy of brotherhood from those whose lot in life is more fortunate.

The poor have received the care and protection of all governments, since the latter are mainly constructed upon the lines laid down in the Bible.

They have been the special wards of all religious sects, who, wrangle as they may about doctrinal points, have ever been in full accord upon the one great and sorrowful fact that "the poor are always with us," "and that he who giveth to the poor lendeth to the Lord." The best minds the world ever produced have striven in the one direction,—to lighten the burden of the poor and oppressed in every land.

NOV 21 1913

86500

Thus it has come about that the government of every country regards it as its highest duty to afford shelter, comfort, and protection to those who by reason of birth or misfortune are reduced to the necessity of seeking aid.

The number and extent of the institutions for the amelioration of the condition of the poor has come to be the index to the type of civilization of a country.

Charity has become the synonyme of civilization. Judged by this standard, most of our cities may be justly proud of their position as dispensers of charity, and, consequently, as exponents of a high civilization.

"The Medical Register" for 1890 furnishes a list of benevolent institutions of New York City, from which I have carefully collated the astonishing fact that during the year 1889 the enormous amount of three and one-half million dollars has been expended for charitable purposes, and that 565,000 persons have found relief of various kinds within the walls of institutions.

Many other cities might be cited with similar results. But while so much has been accomplished for the relief of distress and disease, very little has been done outside of governmental effort to prevent disease and to improve the condition of the poor when they are still in health. Thus it has always been with the lay public. Millions have been lavishly spent for reputed cures of disease, but efforts for its prevention have received but tardy attention.

Nearly a century of time was required, although the unrequited but earnest labor of the whole medical profession were directed to the task, to induce the lay public, and through it the governments of civilized countries, to spend money and to pass laws for the introduction of vaccination, a process by which the most astounding results, in the prevention of a disease which formerly scourged the peoples of the world, were attained.

If this remedy of Dr. Jenner had been a curative agent instead of a prophylactic, its value could have been more readily demonstrated, and it requires no great stretch of reasoning to discover that unlimited sums of money would have been forthcoming for its purchase.

Hospitals, asylums, retreats, homes, and shelters of all kinds, relief and aid societies abound in this country for the care of the sick and distressed. But not one benevolent institution is mentioned which directs its attention to the prevention of disease.

In this respect some nations of antiquity that we are prone to regard as far behind us in civilization are really far in advance of us.

Sanitary Value of Cleanliness.--Among the agencies which the experience of the human race in all ages has demonstrated to conduce to the preservation of health, "personal cleanliness" occupies the foremost position.

The enormous surface occupied by the skin, supplied as it is by all the nervous and vascular accessories of the glands, marks it as one of the chief, if not the foremost, depurative organs of the body. The fact, too, that the skin is the chief heat regulating organ renders it the most important in the human economy. To maintain its function in its integrity has so long been regarded the principal object of personal hygiene that this brief reference must suffice.

While anatomy and physiology have abundantly demonstrated the value of cleanliness for the preservation of physical health, we find ample warrant for affirming that it is equally valuable for the maintenance and improvement of a spiritual norm, in the fact that the religious observances of all sects command washing and bathing in some form among their ceremonials.

The Egyptian priests were wont to wash their bodies three times a day whenever they prepared for great sacrifices.

The Jewish ordinances abound in the commandments for baths for purifications.

The Greek priests washed themselves twice every day and night, in order to prepare for their sacred duties.

The pious Turk regards it as imperative to wash his face and hands and arms and neck before he invokes Allah.

The Brahmin makes his ablutions three times a day, and the rich and poor alike, in that country of castes, journey to the shores of Juma and of the Ganges to purify themselves in the sacred waters.

Good old John Wesley, that most practical religionist, pithily epitomized these practices when he told us that "cleanliness is next to godliness."

The civilizing influence of soap and water has long been recognized.

The cartoonist, representing the anarchist as a dirty, long-haired individual, furnishes a more modern expression of this idea.

Political economists, too, have not failed to recognize the influence of the absence of facilities for proper hygiene in the promotion of misery, disease, and death. And yet, with all these stubborn facts before us, we who boast so much of our civilization are far behind other nations, ancient as well as modern, whom we are wont to regard as much less civilized than ourselves.

It is a sad commentary upon our boasted civilization that we do not imitate these people, and, avoiding the excesses whose pernicious effects history has taught us to appreciate, emulate their generosity in supplying the poor with means for keeping their bodies clean and undefiled.

The descendants of the Goths and Vandals even continued the practice of bathing which they had learned from the conquered people. It was reserved for a more modern and enlightened age to see them fall into almost entire oblivion. In times past, which we are accustomed to speak of as *barbarous* compared with our own, large public baths were erected by collections and benevolent gifts in the chief cities and towns of the continent of Europe for the use of poor people. Saturday was set apart for bathing the school children.

Every Saturday evening, says Hufeland, people formerly went in procession through the streets, beating on pans to remind the lower classes of bathing, and the tradesmen who labored at dirty work washed off in the bath that which now adhered to them.

In the Middle Ages, during the prevalence of leprosy, bathing was regarded as a religious duty. Baths were made a part of convents and hospitals by pious people, who gladly contributed to this benevolent purpose.

Being entirely gratuitous to the poor, they were called *balnea ammarim* ("soul baths"). A portion of the ceremonial of the bestowal of knighthood was the taking of a bath. The marriage ceremony also included not only a bath by the bride before the nuptials, but all the wedding guests were expected to subject themselves to a like refreshment. How useful such a custom would be to-day.

In the fourteenth century nearly every village and town had its bath-room with wooden tubs. The keepers of the baths were given the honorable title of a guild by Emperor Wenceslaus.

In Russia nearly every village has its vapor-bath crudely prepared upon heated stones. After being subjected to the vapor arising from water being poured upon the latter, the bather is well scrubbed with soap and water, receives massage from switches, and then a thorough shower-bath.

The poorest peasant would not think of donning his Sunday attire without removing in one of the village baths the dirt accumulated during his week's labor.

Since the days of the Roman emperors, at Byzantine, public baths have abounded in Constantinople, and spread into the interior of Turkey. They are separated for the sexes in large cities, while in the smaller towns and villages the women resort to the bath during the day, the men at night. There is no distinction of rank or religion. The cost of admission is so small that even the poorest people are not debarred from the bath.

In Egypt baths are numerous. In Cairo, for instance, Mr. Lane tells us, there are between sixty and seventy baths to which the public have access at a small expense. Many persons bathe twice a week. The payment is according to the kind of bath, some being merely washed with soap and water and afterwards plunging into a swimming-tank.

In Japan, Sir Rutherford Alcock, who was British envoy, tells us that the bath is accessible to the poorest peasant, who, when his work is over, can always look forward to the luxury of a hot bath, and a still more luxurious shampooing.

In Yeddo, a bath-house is visible at every hundred steps, known by the escape of steam through the open doors and windows. No one is so poor that he cannot procure a bath, none so wretched that this luxury may not be his.

This was written thirty years ago. Contrast this account with another written about the same time descriptive of our own country.

Mr. Stuart, in his work, "Three Years in America" (quoted by Bell), says, "I found more difficulty, travelling in the United States, to procure a liberal supply of water at all times of the day and night in my chamber than to obtain any other necessary. A supply for washing the hands and face once a day was all that was thought requisite."

An English writer of about the same period is quoted by Bell as saying, "some disgusting economists of both time and waste reduced ablutions to a habit of washing face and hands, leaving the clothing to hide whatever dirt might accumulate on the rest of the body, and, as though enamoured of its ingenuity, their descendants have never abandoned the same filthy and unwholesome practice.''

The picture drawn by this caustic writer may not apply to the hotels of to day, nor to the residences of the wealthy, but it is still true of that part of the population which must earn its bread by the sweat of its brow. Now, what are the bathing facilities of most of our cities? The wealthy have one or more bathtubs in their dwellings. The poorer classes—that overwhelming majority of our population—have no bathing facilities whatever. The servants in the households of the wealthy people—that very numerous class who prepare their food, care for their children, who are daily, yes, hourly, in contact with them in their dwellings,—rarely have good bathing facilities that would encourage cleanliness.

Hence that portion of our community which is in greatest need of the latter has the least means of obtaining that boon to health and comfort which in other countries, regarded as far less civilized than ours, is so constantly and freely offered them that they are tempted into habits of cleanliness.

Need of Improvement.—It would seem to be our duty as well as our interest to afford our employés, servants, laborers, tradespeople, and mechanics at least the same opportunities for keeping the skin healthy that we recognize as imperative in the management of our horses and other animals.

The medical profession constantly has the observation forced upon it that the filthy condition of our poor people is responsible for the spread of many diseases which quickly find their way into the ranks of the better situated classes by means of domestics, laborers, and trades-people. The so-called *tenement odor*, which so often offends the sensitive olfactories in the crowded street-cars and other assemblies of the poor, emanates from decomposed secretions of the skin, which have accumulated upon their persons and found lodgement in their unventilated clothing.

It is not only a moral obligation resting upon the wealthy portion of the community to contribute freely to the removal of this easily remedial evil, *uncleanliness*, but due consideration of the safety of their own households must furnish an imperative impetus in this direction.

But, above all, our city authorities, whose duty it is to protect the people against the causes of disease and death, must find in the abolition of this one ever-present disease-producing factor abundant opportunity for exercising their functions.

Modern hygiene has demonstrated most clearly that the essential principle of sanitation lies in *cleanliness.*

Just as the surgeon has discovered that to absolute perfect cleanliness in the person of the operator, the instruments, the parts to be treated, and, above all others, of the water with which the wounds are to be irrigated, are due the marvellous triumphs of modern surgery far more than to the discovery of antisepsis, so has the modern sanitarian learned that in purifying the food, the drinking water, the clothing, the dwellings, lies the great panacea for the prevention of disease and death.

Modern History of Public Baths.—Public baths have become popular in cities since the English people (to whom we and the world owe so much of its physical and moral improvement) took the initiative in 1842. The first public bath- and wash-house was established in Frederick Street, Liverpool; London and Glasgow followed in 1878, in which one penny was charged. Parliament took an active interest in the matter, and passed laws for the regulation and maintenance of public baths, which are models of legislative wisdom.

The Victoria bath and Arlington Club bath, with three others in Glasgow, are now offering accommodations for men, women, and children. The charges are small, and the number of bathers averages about 1500 a day.

The new baths in Southport, Lancashire, and the Sheffield Company's bath contain swimming pools for adults and children, in which the temperature and all other conditions are carefully regulated, and in which the cost is moderate.

In France and Belgium similar baths have been constructed which are noted for their excellent appointments. In these, as in the English baths, the admission fee is not large. In Vienna there are numerous baths in which persons in moderate circumstances may obtain cleansing for a moderate sum.

The New Central Bad is the most substantial, elegant, and complete bath in the world. One may obtain any kind of a bath in this house at almost any price, according to one's taste and inclinations.

There are various grades of bath-buildings in that city between this magnificent one and the humble *Volksbad.* Hamburg, Magdeburg, Leipzig, Hanover, Cologne, Bremen, Nuremberg, Darmstadt, and other German cities, have provided swimming and other baths which are convenient and at reasonable prices.

How to make Bathing Popular.—Although these structures furnish ample facilities for bathing to the wealthier and middle classes and the better portion of mechanics, and for that reason are to be regarded favorably from a hygienic stand-point, they do not suffice for the purpose of encouraging cleanliness among that portion of the community which really are in the greatest need of it, because of their unhygienic environments and their exposures to disease and death-producing causes.

To popularize bathing among these people, public baths must be established in the immediate vicinity of the populous tenement districts, where their presence would offer constant allurements, and the people may obtain in passing a good bath quickly, comfortably, and cheaply.

Such establishments would be abundantly patronized, as experience in Germany and elsewhere has demonstrated.

All the vast hygienic benefits of the bath may then be obtained at an expense which is trifling compared with the cost of the sickness and death with their attendants, distress, loss of time and money which the practice of habitual bathing would most surely prevent.

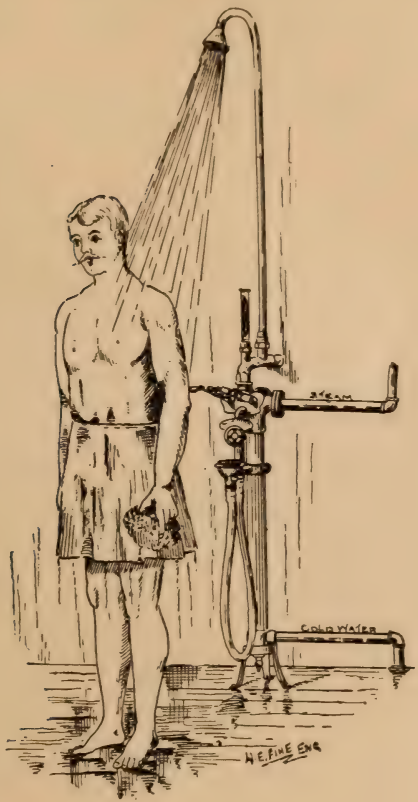
New Method or the New Bath.—A new method of bathing has been introduced in New York City, which fulfils these conditions fully and satisfactorily by means of what is known as the rain-bath.

By this means alone large masses of people may receive thorough cleansing without the possibility of contamination, and with the most economical expenditure of money on the part of the city, and the least loss of time on the part of the bather. That it is popular among the working people is demonstrated by the fact that at the People's Bath, at Centre Market Place, in New York City, over 80,000 people have bathed in one year, despite the fact that a fee of five cents was exacted, and perhaps that is the better plan, as in that way public baths are self-sustaining.

The essential principle of these baths is the abolition of the old-fashioned tub, to which we have been so long wedded, that it seems almost a *bull* to say that one may take a bath in the house without a tub.

But the difficulty of keeping the implement clean is the invincible barrier to the public bath, in which facilities must be offered to large numbers in rapid succession. The large quantity of water needed must always be another obstacle.

These objections are at once overcome by adopting the rain-bath—known to us as the shower-bath—as a substitute for the tub-bath. The bather, as shown in the cut, simply soaps himself, and standing in a rain of warm water, falling with some force, scrubs and cleans himself perfectly in a short time. He has the mechanical effect of the falling stream to aid him, and does not, as in the tub, continue to bathe in soiled water.



The Bath and the Bather.

Imagine for a moment a begrimed coal-heaver attempting to rid himself from his day's labor in a bath-tub. It would not be long ere he would be immersed in a concentrated solution of coal dust, unless he had a lavish supply of warm water.

Let the same individual enter the rain-bath. Being thoroughly soaped, he stands upon an inclined asphalt floor, under a large rose from which a coarse spray is descending with some force. Both hands being free as in the tub, he may rapidly rid himself of all accumulation which the descending stream would wash away, flowing at once from him upon the inclined floor and thence into the gutter or sewer.

The advantages of the rain-bath are—

(1) The outlay for tubs is avoided, as well as the cost of their wear and tear. This is an enormous expense if durable tubs are wanted, as many of us are aware.

(2) The avoidance of filling a tub before, emptying and scrubbing it after each bath, must economize much time, labor, and expense.

As the rain-bath is automatic, it requires no attendance whatever to prepare it. Supervision only is necessary. It is so simple that it is easily kept in repair, the water-supply coming from an apparatus not in reach of clumsy or careless people.

(3) The time required for the rain-bath is much less than for the tub-bath, because the mechanical effect of the descending stream aids the removal of accumulated matter, and because no soiled water touches the body and,—

(4) The cleansing effect is more thorough for the same reason.

(5) The space needed for a rain-bath is about one-half of that required by a tub-bath.

(6) The economy of water is enormous. The tub-bath requires more than double the quantity of water.

(7) The danger of communicating disease is placed beyond possibility, even if the attendants or bathers are careless ; the rain-bath keeps itself clean automatically. Not a particle of impure or contagious matter can be left in the bath-room proper.

(8) The refreshing effect of the rain-bath is valuable. While the tub is relaxing, the rain-bath stimulates the skin, and thus provides protection against subsequent exposure. If its temperature is lowered at its termination the tonic effect of such a bath would be of immense value. The first bath fulfilling these conditions approximately was exhibited in the hygienic exhibition held in Berlin, 1883.

The first public bath was constructed upon this principle in 1887, in Vienna.

In Frankfort, the banker Theodore Stern opened a public rain-bath the same year, which is a model of its kind, costing $5000. Baths are furnished for two and a half cents, inclusive of soap and towels.

This subject was first brought forward in this country by Dr. Simon Baruch, of New York, in 1889, and is now in successful operation there.

The people's bath-house, No. 1, was opened in September, 1891. During the first year it attracted 59,000 bathers. In all about 360,000 have resorted to it. It has been found, too, that most of the bathers belong to a class of poor but self-respecting work-people whom it was intended to benefit.

As a result of this experiment, it is now proposed to erect, at the expense of the city government, a much larger and more costly bath-house.

Other cities, like Brooklyn and Boston, have become interested. Even such comparatively small places as Trenton, N. J., and Yonkers, N. Y., have taken up the matter.

It is to be hoped that before many years the public bath-house will take its place beside the public library as an agency for good citizenship in every well-governed city.

It is also used by many factories in the old country, thus affording workmen opportunities for cleanliness of which they gladly avail themselves, as well as by soldiers, where they are garrisoned in large cities. Moreover, it is used in connection with public schools and hospitals in this country and Europe.

This placing of shower-baths in or near school-houses for use of children at certain hours of the day is certainly to be commended. Any one who has observed the over-crowded school-houses in the poorer quarters of a city, and who remembers that the homes of the children are, for the most part, absolutely without bath-rooms or other aids to cleanliness, must regard their experience with the greatest interest. Cleanliness rather than physical pleasure is the object of this moral reform.

On the other hand, the quality of our citizenship should benefit by an increase of cleanliness. Cleanliness of person is conducive to cleanliness of mind as well as health, and clean-mindedness is certainly conducive to good citizenship.

Being a subject intimately connected with the public weal, it comes within the legitimate province of the authorities of cities.

It is a well-recognized fact in political economy that the most important function of government is to protect the lives, liberties, and property of its people.

Since health is the most important of all its possessions, it becomes the duty of the government to guard and foster the latter at any cost. The vast sums spent for quarantine,—for health boards,—good water, and food-supply, etc., are expressions of this idea, that the preservation of the public health, which is the aggregate of the health of the individual, is an important function. Health may be defined as the harmonious action of all the organs of the body and their normal relations to its environment. Whatever contributes to these ends is the lawful province of the government to consider.

Every intelligent layman knows as well as the physician that cleanliness of the person is an important element in the problem of health maintenance.

The great Hufeland says, in his art of prolonging life, "I regard cleanliness and cultivation of the skin as the chief means for the prolongation of life.

"Cleanliness removes everything which our system has separated as useless and injurious as well as everything which has attached itself to our bodies from without.

"The cultivation of the skin is an essential part of this process, and consists in such treatment from childhood to old age as will render it active and open."

Dr. Renk, in the "Hand-Book of Hygiene," justly says, "The recognition of the high value of the care of the skin to human health, and the almost disgraceful fact that bathing is more cultivated at the present time, even by people whose culture stands upon a comparatively low grade, make it the function of hygiene to determine *ways* and *means* which would remedy the present lamentable condition of affairs.

"As such must be designated the popularization of baths, which are now only accessible to the privileged classes by the erection of public baths."

This is true! Good ventilation and the light of heaven for the dwellings may be and have been secured by legislative enactment; the purification of food and water-supply have also received much attention; but the opportunity for personal cleanliness, which is of equal importance as a hygienic measure, is still not afforded our poor people by their wealthier brothers, nor by the government, which is bound to protect us all.

It requires no argument to prove that every consideration of law, propriety, and sanitation demands that our city authorities take immediate steps to secure to our laboring population near their dwellings, and in the school-buildings, station-houses, hospitals, etc., the means of cleanliness and refreshment, health preservation, and moral improvement, which the public bath is more capable of furnishing than any other more costly investments, and to thus not only endear themselves to the hearts of a grateful constituency, but also erect for themselves a monument more enduring than brass.

Municipal Abattoirs.

BY P. H. BRYCE, M.D.,
Ontario, Can.,
Secretary of the Provincial Board of Health.

IN the evolution of public health work, as in most other branches of municipal progress, it must be confessed that the commercial phase has played in most instances a more potent part than the purely scientific element of such progress. This has been especially true with that branch of state and municipal medicine dealing with all animal diseases.

Thus, in Europe, the studies of Davaine and Pasteur received public recognition, not because of the dangers which the prevalence of anthrax in cattle and sheep might bring to man, but on account of the fact that, by the adoption of vaccination against anthrax, the state might be saved the annual loss of hundreds of thousands of farm animals annually. Similarly in England serious restrictive measures were adopted against rinderpest and pleuro-pneumonia, not to prevent the possibility of the flesh of diseased carcasses being placed in the market, but from the financial losses which fell principally upon the farmers and country squires.

The same story has repeated itself on the American continent. Naturally free from the wide-spreading epidemics among farm stock, such as those which spread from the Ural slopes and Southern Russia over Western Europe, the American public looked upon the spreading of pleuro-pneumonia from infected

European cattle with indifference; and even in Massachusetts, the early efforts of State and municipal authorities to stamp out the disease were not made with any degree of seriousness. Here, too, the presence of trichina in Western pork passed unheeded, until in 1880 the Italian and German governments gave these commercial centres a rude shock by excluding from their countries American hog products, which had amounted in 1881 to $104,600,000 for all exports. Even then so little was known or cared for the health question, as to its effects on the American citizen, that the secretary of the Department of Agriculture published reports in 1883, going to show that after extensive investigation by inspectors no evidence of the disease was to be found in the millions of animals in these Western herds. So, too, we find in the report of the chief veterinary inspector of the Dominion of Canada, so late as 1895, a statement that tuberculosis was but slightly present in Canadian cattle, and that it was rapidly disappearing in some provinces, though no official action had been taken regarding it, except by some municipal and provincial boards of health in a very imperfect manner.

But in the United States, as in Canada, the conditions of the export trade have played, and are playing, a most important part in the evolution of scientific methods for dealing with the health of all farm animals intended for consumption as human food. The scheduling, in 1882, of American cattle in England—that is, requiring their slaughter immediately on landing—suddenly caused the Federal authorities at Washington to think that, though it might be quite proper that the American people might continue to eat diseased meat, it was quite natural that the foreign consumer should be protected against such, if he wished it. Hence it was that Secretary Folger, of the Department of Agriculture, by an Act of Congress dated May 29, 1884, established a Bureau of Animal Industries. The extent of the development of its work to-day may be measured by the fact that, while in 1887 the export of live cattle to England amounted to less than 100,000 head, it had more than doubled in 1894.

As is now known to most sanitarians, the work of the bureau, apart from dealing with such epizootics as Texas fever and pleuropneumonia, is principally that of examining with much care and scientific means the animals and carcasses of cattle, hogs, and sheep killed at the great abattoirs at Kansas City, Chicago, Buffalo, and some other points, most of which are intended for export to foreign countries.

These great abattoirs, some of which can kill 2500 hogs daily, are registered with the bureau in Washington, and have a complete staff of inspectors paid by Federal authorities, inspecting, branding their products for the foreign markets. But there the matter ends. In the city of Buffalo, which in 1895 *boasted of having* the largest sheep market in the world, more than 6,000,000 sheep having passed through it, and a very large cattle market, while a staff of twenty-two Federal inspectors are employed, two inspectors for the yards, slaughter-houses, and butcher shops, are all that municipal government has supplied for the protection of the lives of the 350,000 people of that commercial centre. So spasmodic had been the attempts to deal with the inspection of the daily food-supplies of this city, that a trade in the canning of newly-born calves had been set up within a few miles of the city, which became so notorious that a seizure resulted in the destruction of several tons of such prepared products.

With few exceptions, so far as the writer has been able to gather, the municipal inspection of the meat-supply of both American and Canadian cities is in no degree superior to that of Buffalo, which has in many particulars one of the best conducted health departments on the continent.

We do not need to inquire wherein lies the remedy, when we have it most admirably illustrated in the references already made to what the American Federal government is doing for the foreign consumer. We are quite aware that many States are now actually engaged in the investigation and, to some extent, the stamping out of tuberculosis in the herds of cattle, and that here and there municipal governments have attempted to register all milch cows supplying public milk which have withstood the tuberculin test. But the absence of municipal abattoirs and systematic inspection of all carcasses for local consumption is almost universal. Most cities have doubtless the old English market by-laws for seizing and condemning diseased meat exposed for sale ; but it is hardly necessary to say that trifling inconveniences of this kind are easily overcome by him who sells diseased meat, and knows it. The demand for systematic inspection is everywhere being felt, and the Provincial Board of Health of Ontario has succeeded so far as to have had the legislature pass the following Act making municipal abattoirs permissive, but where adopted, their government must be carried on under the following regulations approved of by the said board :

AN ACT TO PROVIDE FOR THE INSPECTION OF MEAT- AND MILK-SUPPLIES OF CITIES AND TOWNS.

1. (*a*) The municipal council of every city or town may by by-law provide for the establishment of a public slaughter-house or abattoir within the limits of the municipality, or in such adjoining municipality as shall by by-law sanction its erection therein, and for the construction of cattle-yards and pens for the proper keeping therein of animals intended for slaughter, and for charging fees to defray the costs incurred by the local board of health in carrying out the provisions of this Act.

(*b*) Every such slaughter-house or abattoir, and cattle-yard and pen, shall be constructed, equipped, and regulated in conformity with any regulations in that behalf, from time to time adopted by the Provincial Board of Health, and approved by the Lieutenant-Governor in Council.

2. The local board of health of every city or town in which such slaughter-house or abattoir, cattle-yards or pens may be established shall have the control and supervision of the same, and shall be responsible for the due carrying out of the regulations of the Provincial Board of Health made in connection therewith; and the costs of the supervision and inspection carried out under this Act, and of any regulations made under it with regard to slaughter-houses or abattoirs, or cattle-yards or pens, or in carrying out any other provisions of this Act, shall be paid from time to time by the treasurer of the city or town out of the fees charged for such slaughter or inspection, on the order of the local board of health.

(*a*) The powers conferred upon local boards of health and their officers by section 99 of *The Public Health Act* shall apply in the supervision and inspection carried on under this Act.

3. The local board of health of every city and town where such cattle-yards and pens are established, may employ one or more competent persons, approved of by the medical health officer, to inspect at such slaughter-house or abattoir, or at such cattle-yards or pens, all animals, carcasses, and meat brought into the municipality and intended for human food.

4. (*a*) The local board of health of every city and town may, in addition to periodical examination as to purity of public milk-supplies, and as to the sanitary condition of the byres, or places where cows for public milk-supplies are kept, inspect every milch cow kept therein, as to its general health. In addition to such general inspection, the local board of health may provide for the testing with tuberculin, by a registered veterinary surgeon, of every cow kept in such byres or places for the diagnosis of tuberculosis.

(*b*) Every cow may be tested and thereafter dealt with according to the methods set forth in the regulations adopted by the Provincial Board of Health, and approved of by the Lieutenant-Governor in Council.

REGULATIONS ADOPTED BY THE PROVINCIAL BOARD OF HEALTH, JUNE 9, 1896, UNDER CHAP. 63, 59 VICT., 1896, TO PROVIDE FOR THE INSPECTION OF MEAT- AND MILK-SUPPLIES OF CITIES AND TOWNS.

1. Every municipal slaughter-house or abattoir shall be of the character and equipment set forth in Pamphlet No. 1, of 1896, issued by the Pro-

vincial Board of Health, and shall consist of a building containing not less than 1000 square feet of floor space, and equipped with—

(*a*) Yards and pens with shelter for cattle, and appliances and conveniences for feeding and watering the same.

(*b*) Killing floor.

(*c*) Refrigerator or store-room with separate hanging-room and ice-chamber.

(*d*) Proper and adequate appliances for killing, cleaning, and hanging of animals, for heating of water, for removal of blood and offal, and for receiving the organs and fat.

(*e*) Pure water to be obtained from town or city water-works, or from tanks attached to a windmill or other mechanical appliance, assuring an adequate supply for flushing and general cleansing purposes.

(*f*) Sufficient and proper appliances for heating and ventilation.

(*g*) Properly constructed and adequate sewerage and means for disposal of sewage.

(*h*) Adequate arrangements for disposing of refuse and offal, so as not to create a nuisance.

2. The special inspection carried on by local boards of health as provided for by section 4, chap. 63, 59 Vict., shall consist of—

(*a*) A personal inspection by a veterinarian of every milch cow, kept for supplying public milk, for evidence of disease.

(*b*) An injection of tuberculin, supplied through the local board of health or medical health officer, and obtained from a source approved of by the Provincial Board of Health, and applied in the following manner: Having had the forenoon and afternoon temperature taken to obtain an idea of the existing condition of the animal, a ten per cent. solution of normal tuberculin is to be injected to the amount of from one to four cubic centimetres according to the age of the animal, and this injection should be made in the evening. The temperature must thereafter be taken regularly every three hours for a period of from twelve to fifteen hours, and carefully recorded. Any notable rise of temperature after injection indicates the existence of tuberculosis in some one or more organs.

(*c*) Each animal tested and found healthy shall be described and numbered by the veterinary inspector in a book supplied and prepared by the local board of health, which book shall be its property. A metal tag shall be affixed to the ear of the cow, with a number corresponding to that entered in the book describing said cow.

(*d*) Should any animal in any dairy herd be found to give the tuberculin reaction or be found otherwise seriously diseased, she shall at once be removed therefrom, and shall be dealt with by the veterinarian of the local board after the methods hereinafter set forth.

3. The cows found tuberculized or to react with tuberculin are to be dealt with in some one or more of the following ways:

(*a*) If wasting, and the clinical symptoms of lung disease are present, the cow shall be destroyed and the carcass dealt with as provided in section 99, chap. 255. R. s. s., 1887.

(*b*) If showing the reaction of tuberculin, while in fair condition, such cows shall be placed in stables or pens separated by an open air space from the healthy herd; and must not have access to the same yard, or the same food or water as the healthy animals. Thereafter the milk in such cows may be allowed to stop or dry up, and the animals fattened as speedily as possible for slaughter; or the cows may be milked and the milk thereafter boiled for half an hour, and then fed to pigs or calves.

(*c*) A cow in calf may be kept, but the calf at birth must at once be removed from the cow, and if fed with milk from a tuberculized cow such milk must be sterilized. Such cow should, however, be fattened and killed while the disease is still slight and localized.

That municipal action under the laws will be gradual is to be expected, but the establishment of abattoirs in the larger cities is having the direct effect of forcing smaller towns to protect themselves against the dumping of second-class and diseased meat upon them. It is not necessary here to indicate by statistics of disease the needs of such constant inspection. Every health officer is acquainted with these. As to the practical operation of these abattoirs, it need only be said that for many years the great continental cities of Europe have carried out rigid inspection for cities of over a million inhabitants with perfect ease. That the question is not a new one may be illustrated by the following quotation, which may fitly conclude this article.

"In an edition of reprinted pieces of the great English novelist, Charles Dickens, may be found a most interesting article entitled,—

"'A Monument of French Folly,' written apparently some little time after 1850.

"After describing the location of the London slaughter-houses as being in the neighborhood of Newgate, White Chapel, etc., and describing some of the horrible procedures by which cattle are brutally wounded and slaughtered in the midst of filth, he says,—

"'Now to the comparison in these particulars of civilization between the capital of England and the capital of the frog-eating and wooden-shoe wearing country, which the illustrious common councilman so successfully settled.'

"In Paris there are no cattle markets. Cows and calves are sold within the city, but the cattle markets are at Poissy, about thirteen miles off on a line of railway; and at Sceaux about four miles off.

"In Paris there are no slaughter-houses in our acceptation of the term.

"There are fine public abattoirs, and in these all the slaughtering for the city must be performed. They are managed by a Syndicate or Guild of Butchers, who confer with the Minister of the Interior on all matters affecting the trade, and who are consulted when any new regulations affecting the trade are contemplated for its government. They are likewise under the vigilant superintendence of the police. Every butcher must be licensed; which proves him at once to be a slave, for we do not license butchers in England, we only license apothecaries, attorneys, post-masters, publicans, hawkers, retailers of tobacco, snuff, pepper, and vinegar, and one or two other little trades not worth mentioning. Every arrangement in connection with the slaughtering and sale of meat is a matter of strict police regulation. (Slavery again!)

"And so on with a fine description of the cattle markets and the abattoirs at Montmartre.

"Such is the Monument of French Folly which a foreigneering people have erected in a national hatred and antipathy for common counselling wisdom."

The Disposal of Waste-Water in the Country.

BY HARVEY B. BASHORE, M.D.,

West Fairview, Pa.

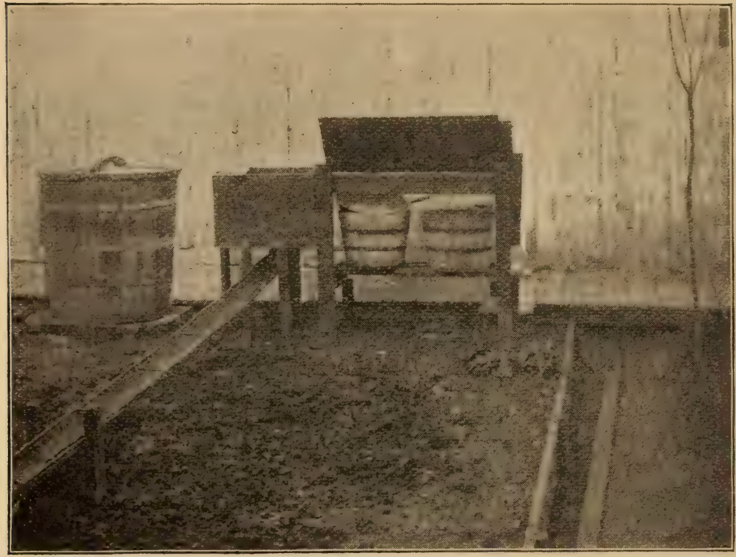
THE householder in small towns and villages where there is no sewerage system is always confronted by the question of slop-water disposal.

The women, however, it seems, generally solve the problem by throwing the waste-water out the kitchen door, a practice both unsightly and insanitary. The essentials required for the proper disposal of waste-water is a garden-bed (any strip of loose, porous soil will answer) and an old tin roof-gutter.

The construction will be readily understood from the photograph. A box about a foot square, lined with tin or galvanized iron, is placed in some suitable location to serve as a receptacle for the water, and from this extends the gutter in any direction available. The bottom of the box is perforated by twenty or thirty small holes, which permit the water to flow into the drain. A number of small holes is better than a few large ones, inasmuch as the smaller tend to keep back solid particles from the drain and prevent clogging.

The gutter is twenty feet long, nine inches above ground at the upper end, and three only at the lower end, so as to give sufficient fall for its rapid emptying,—a very necessary factor in cold weather.

The gutter is pierced every three inches by half inch holes, which permit the liquid to flow onto the soil, and this soil requires no other care than a little raking now and then to facilitate absorption and evaporation.



Along each side of the drain may be planted a hedge of laurel, a row of sun-flowers, or any vegetable which may happen to be desirable.

If necessary, the waste-pipe from the kitchen sink and the bath may be connected directly with the receiving bowl.

An important point in the use of the drain is to keep solid and liquid refuse separate, for a liquid containing many solid particles tends to clog the holes of the slop-receiver and to interfere with its efficiency.

This separation is easily accomplished by having two buckets near the drain ; over the one is placed a tin basin with a perforated bottom. The semiliquid refuse as it comes from the kitchen is placed in the basin,—the water falls through and the solids are emptied into the other bucket.

As shown in the plate, the buckets are elevated above the ground, and the drain and all its fixtures are open as much as possible to the free circulation of air, a point which greatly serves to prevent odor.

A drain made after this fashion will dispose of all the waste-water of a family of four or five, and is practically odorless.

Hinderances to Health and the Advancement of Sanitary Science.

BY B. O. REYNOLDS, M.D.,

Lake Geneva, Wis.

THE hinderances to health and sanitary science surround us on every side, and are so multiform and so thoroughly imbued with human customs and practices that a writer, who attempts to discuss or elucidate the subject, finds himself at a loss to know where to begin and where to end.

As far back as the voice of history can be heard, wars, contentions, famine, pestilence, and life-destroying agents have ever and anon accompanied man throughout all the conditions of savage as well as civilized life ; wherever we be, and whatever we do, the "grim monster death" is ever near us, and ready to clutch us in his cold embrace. In ancient times fatal epidemics and pestilential diseases were generally unavoidable, but, happily, in this enlightened age they can and should be avoided, or at least shorn of their terror when they do appear.

A little more than a third of a century ago a vast army of men, in the prime of life and vigorous manhood, marched away to the fields of strife and deadly conflict, and 300,000 never returned. Their deaths were unavoidable, they perished in a noble cause, they died in defence of a sacred principle, that their country might live. It may be difficult for us to realize that more lives are unnecessarily sacrificed in the United States every year than perished during the late war; but such is nevertheless the fact.

It is passing strange that man, made but "a little lower than the angels," endowed with intellect and reason, whose love of life and innate fear of death are so deeply implanted in his nature, would not, like a "flaming sword, turn every way" to guard the citadel of life, and be ever vigilant to do all in his power to thwart the "King of Terrors" as long as possible, and preserve the health and life that he loves so dearly.

On the contrary, we find him utterly careless of his health (until it is lost), and in a thousand ways inviting the attack of disease and death upon himself.

People who shudder at the thought of suicide or sudden death, and turn away from the contemplation of such a melancholy ending of life, do not hesitate to begin self-destruction by a slow but sure process, thus prolonging the agonies of death through suffering years.

It is said, "man's life is but a tragedy," his first utterance is a cry of pain, his last the groan of death, yet causes precede effects in the vital actions of the living body as certainly and as surely as they do in any other department of nature. We are taught that we may sin against our moral nature and live a life of impiety, but at last sincerely repent and all will be forgiven, but the laws of physiology inform us that no amount of repentance can restore that which is lost, and that for every violation of the laws of our being we must sooner or later inevitably pay the full penalty; "that which we sow we shall also reap;" that pain, suffering, disease, and premature death are the necessary consequences of the violations of the laws of health, and from them there is no possible escape. As brevity is the order here, I will only notice a few obstacles among the many that hinder the success of sanitation. The first is pernicious fashion. That foolish sentiment that constrains us to ape and outdo in foolishness other fools has filled our cemeteries with the premature graves of thousands of the fairest of the human race, and still the Moloch holds his witless victims in abject servitude.

How rarely is seen a healthy fashionable woman? Not one in a thousand could successfully pass a medical examination for a life insurance. The fashion plates which thousands endure so much agony to resemble are conspicuous models of female deformity,—miserable caricatures of the natural healthy human form as fashioned by the Creator. With many it is considered the mode to become pale, sickly, and delicate, while robust health is regarded as the evidence of ill-breeding and vulgarity.

"Our bodies are fearfully and wonderfully made," and any attempt to unduly compress a healthy normal waist, wherein are situated many vital and important organs, to the ideal brainless standard of feminine fashion, every medical man understands must inevitably lead to painful and fatal diseases. Let us clinically examine one of these interesting patients: we find her face and lips almost bloodless, cold hands and feet, a quick, weak, and irregular pulse, a poor, irregular, and capricious appetite, dyspeptic, constipated, unable to sleep, backache, painful and irregular menstruation, attenuated muscular development, a victim of headache and general debility.

The heart is displaced upward, the apex thrown forward, the liver pressed upward towards the diaphragm and into the right lung, the stomach distorted and compressed, the intercostal spaces diminished and obliterated, the costal cartilages bent abnormally, and almost immovable in respiration, the aorta and blood-vessels of the trunk so pressed upon that their free circulation is impeded, the intestines forced down low into the abdomen, the uterus we find prolapsed and retroverted; these are some of the effects and conditions necessary to develop a fashionable woman. It can only be attained by diminishing the diameter of the chest beyond the possibility of the vital organs remaining *in situ.*

These devotees also despise the sacred office of motherhood; they are wont to destroy their children *in utero*, and if by chance any are born alive, they deliberately starve them to death by denying them the only food prepared by nature's God for the sustenance of children. Oh, no! a sweet babe nursing at its mother's breast is a spectacle too vulgar and indecent to be thought of, and yet they manifest the fondest affection for their "dear little" poodles.

Kate Field says that "a woman who aims to be fashionable must neglect home, husband, and children, put away comfort and convenience, be a first-class hypocrite and a good slanderer, and at the end of ten years break down and become a physical wreck."

Such are the women of fashion, suffering and dying by thousands annually in consequence of the violations of the inexorable laws of nature; they excite our pity, but we are unable to render any permanent relief.

> "They purchase pain with all that joy can give,
> And die of nothing but a rage to live."

The customs and habits among men are yet more pernicious and criminal. They contract with avidity the most loathsome and fatal diseases, and "visit their sins" upon their innocent posterity; they drink themselves into insanity, suicide, delirium tremens, chronic alcoholism and liver diseases; they gormandize themselves into dyspepsia, gout, liver and renal diseases; they assassinate, murder, and maim one another.

Both men and women by thousands annually destroy their health and lives by the opium habit and the voluntary use of the most poisonous drugs, etc. Men and women who thus wantonly violate the laws of health have little regard for civil laws; and from this class our asylums, prisons, jails, and alms-houses are ever filled to overflowing. Is it any wonder, then, that sanitary science moves so slowly?

One of the chief causes that handicap the advancement of sanitary science, and the one most difficult to remedy, is found in diseases of heredity, such as cancer, scrofula, consumption, epilepsy, insanity, etc. These hitherto incurable diseases are caused by a violation of the laws of inheritance. To this is justly attributed the fearful death-rate of children.

Could we dry the streams of death, misery, woe, and crime that flow from the almost universal violation of this law, we would confer upon the human race a boon, in comparison with which the great discovery of Jenner would sink into insignificance.

Stock-breeders have long since found promiscuous breeding suicidal to their pecuniary interests, and have abandoned it in the rearing of dumb animals; but in the propagation of human beings, these important considerations are wholly ignored.

Should the time ever come when the entire people intelligently obey the laws of health and practise its benign principles, our present death-rate will become reduced at least one-half.

School Hygiene: Effects of Foul Air in the School-Room.

BY T. W. NUZUM, M.D.,

Brodhead, Wis.

THAT the subject of ventilation and heating our public school-rooms has been largely overlooked in many of our country and village and even city schools is only too apparent to any thoughtful observer, and especially to those who have taught in these rooms.

Our best authorities on this subject claim that each pupil in a room should have fifteen square feet of floor, 250 cubic feet of space, and from 1500 to 2000 cubic feet of fresh air every hour. Now, if you will compare these figures with the results of some observations you may make on this point, you will find that many, if not all, of our school-rooms fall far short of furnishing an adequate amount of floor space; while the cubic space will not be one-half that required and the amount of fresh air introduced not more than one-fourth what it should be. Again, when we take into account the fact that a child exhales twice as much waste matter as an adult of equal weight, we begin to realize to what extent the air becomes vitiated during one session, even though it be of only one and one-half hours' duration.

The amount of vitiation is measured by the amount of carbonic acid contained in the air, and this is estimated by the musty or offensive odor one perceives on first entering the room from the fresh air.

The carbonic acid is not in itself the most poisonous, in fact, it is, perhaps, the least poisonous element; but from the fact that it is formed by the decomposition of organic particles contained in exhaled air, these particles being very prone to decomposition, it becomes the most tangible evidence of atmospheric impurity.

Fresh air already contains from 2 to 5 parts of carbonic acid to 10,000, while 9 to 10 parts in 10,000 become very offensive and entirely unfits the air for use.

The danger of impure air depends upon the fact that particles of organic matter, living or dead, may be introduced, which tend to produce disease in the recipient. These organic particles consist of ptomaines and leucomaines ; the one produces infection and the other toxæmia. Ptomaines are alkaloids produced by putrefaction.

Infection is produced by a particular poison, differing from ordinary poisons in that it is capable of reproducing itself indefinitely. It is a living body or organism that multiplies in the system to which it gains access. Now with these, to us all, very plain facts before us, we can see how the school-room, when not properly ventilated, becomes the hot-bed of infection and contagion.

The first and most noticeable effect of foul air is exerted upon the nervous system ; when the pupils first enter the room they appear fresh, wide awake, and attentive, but they soon become drowsy, listless, and inattentive ; and if the teacher himself is equally anæsthetized by the carbonic acid, and opens a window or door, very soon there will be a change for the better ; but if a supply of fresh air is not obtained, headache, nausea, and syncope are the result.

The physical growth is more or less stunted, children grow slender, pale, and anæmic. There is loss of appetite, and the powers of digestion fail, the tongue is furred, and they complain of a bad taste in the mouth on rising and of constant weariness. Their sleep is disturbed and broken, and they arise quite as weary as when they retired.

In this enfeebled and debilitated condition they fall an easy prey to tuberculosis, the germs of which are exhaled by one of many of their school-mates. Rickets, bronchitis, nasal catarrh, pharyngeal catarrh, and any of the acute diseases are readily contracted.

If one of the inmates of the room is taken with scarlet fever, measles, or whooping-cough, many, if not all, of the pupils will follow, because of the concentration of the poison, while in a well ventilated room the victims would be few.

In these small and illy-ventilated rooms, where the air is reheated and rebreathed many times, the room becomes rapidly overheated, the pupils become depressed and relaxed, and perhaps perspire. Now the only means of relief is to throw open a door or window and a rapid interchange of air takes place ; owing to the great difference in the temperature of the outside and inside air, some unfortunates must sit in the draught, and acute colds or something more violent follows. Also in passing from the overheated rooms to the cold air the change is so sudden and so great as to produce more or less of like results.

Some one has aptly said, "Prevention is better than cure, even if that end were always attainable." And the difference in cost of properly constructed and ventilated rooms can very soon be expended in caring for the little ones who contract disease through this neglect.

I think the public are sorely in need of information along this line, and that when people know the facts as they are, and realize fully the source of much of their trouble, they will not be slow to remove the cause, and will find it economy to do so.

Children of Feeble Resistance: Their Care and Management.[1]

BY JOHN MADISON TAYLOR, A.B., M.D.,
Professor of Diseases of Children, Philadelphia Polyclinic, etc.

(Concluded from Vol. XI, page 730.)

CAUSES OF FEEBLENESS.

THE causes of feebleness are of wide variety and not to be clearly differentiated always, many times overlapping. They may be divided, for the purposes of clinical study, into those which are (1) inherited, (2) intrinsic or essential causes, (3) developmental, (4) acquired. The inherited causes of weakness are rather those of predisposition, "a type of tissue soil," an attitude of trophic energy, a tendency to this or that condition, active or passive, in which there is an element of remote or near heredity. And here also come in racial characteristics, the peculiarities produced in races by living in certain narrow conditions, it may be, of deprivation or moulding environment, lessening the powers of resistance. This is commonly seen in localities where the people have lived under certain similar conditions for a number of generations, or where salient characteristics show themselves throughout a family strain.

Such cases as these are being continually modified by changed circumstances, and are studied with more divergence of conclusion than most other things. The views of some of those who write upon heredity are sometimes wrong, at other times silly, and rarely of much practical value. This matter will be touched upon under predisposition. Intrinsic causes of weakness are also to be called essential; or, we might make use of the ancient medical term "idiopathic," still a respectable cloak for our ignorance. There are numbers of children in whom we find marked lack of vigor, a miserable capacity to react against depressing causes, and in whom a very careful search fails to reveal any recognizable or rational ground for their feebleness. Such a child may be one of a family otherwise vigorous enough, in whom there is no good ground for accusing heredity or collateral conditions. Moreover, while it is readily possible to put one's finger upon the few apparently adequate causes having to do with the early upbringing, nevertheless, upon equally careful search in the records of some of the children of the same parents, a very similar history may be obtained. So, as a matter of fact, there is no rule of guidance to be elicited; the child simply is not strong. All we can do is to recognize that such children as these are deficient in vigor and take the necessary precautions for repair and for development.

---

[1] From the International Medical Magazine.

It has seemed to me that a likely cause for this condition will be found most times in a lowered state of vitality in the parents, especially in the mother immediately preceding birth or during gestation. Therefore this might be called prenatal. Children of an aged father, even though by a vigorous mother, are almost always frail; also the offspring of a mother in the late-bearing periods. But not much is to be gained by a variety of terms, all more or less conjectural and descriptive, but entirely irremovable, and it is better to be content to recognize isolated cases of weakly children when we see them and to set ourselves sedulously searching for remedies rather than classifications.

Next comes the subject of developmental causes, which oftentimes are forcefully operative in producing a wretched child, who might readily have been a fine, vigorous person if rightfully handled. This is a very important subject and warrants a fuller consideration than the others, for many reasons, chiefly, however, because such cases are susceptible of large improvement as we meet them; but if we could have gotten hold of them earlier, or had they been soon enough recognized, this gain might have been made most satisfactory. There is too much reliance in the mind of the average practitioner on the abundant powers of nature acting with the accidental environment of the child. Children are left much to their own devices to grow as they may, and this is safe enough if only they happen to be primarily well endowed with initial vigor, and if the accidents of their surroundings and influences are, and continue to be, wholesome. By no means should we interfere with the normal processes of healthy, natural tendencies; spontaneity should be always encouraged. The best human beings come from healthy, humble households, more often found in the country or in villages, where domestic methods are simpler and the exciting or complicating factors are fewest. It may be assumed that in the cities not only are the perils which beset the infant far more numerous, but the opportunities for right development are less, and need especially the watchful care of parent and teacher, and, above all, the skilful supervision of the medical adviser. Civilization may not be the boon we delight in regarding it, for undoubtedly the highest products of civilization are not, as a rule, the best equipped with working powers of body or mind, and it is beyond peradventure that in the more crowded cities with all their improved sanitary conditions the most pitiable instances of degenerate humanity are found.

Here, then, is need for our best endeavors to bring out and improve the latent possibilities of the future bread-winners and propagators of the race. Not that all virtue resides in country air, or that to the city child an inevitable blight continually threatens; but human beings can only be expected to develop in proportion to the two factors,—one the primal capacities, the other opportunity. Moreover, whereas water may be induced by much skilful modification of the laws of nature to rise higher than its source, its normal course is to fall along the lines of least resistance, to go where it may, and to take its color from the soil over which it flows. And so with all of us from the cradle to the grave, we strike our level soon or late. And if peradventure some attain to great bodily or mental eminence, it is mostly through good help enjoyed, or at least by escaping hurtful opposition. Considering, then, the developmental needs of the child from the physical stand-point, we may divide the subject thus: Of a normal child, as we may assume him to be usually found, equipped with a good foundation of bodily integrity and original competence, there is much that may be said concerning opportunity and encouragement through various developmental epochs as a babe, infant, child, youth. And these again are somewhat modified, especially in later years, by the differences of sex. It should be recognized, too, that those on different planes of life require different kinds of advice and privileges. Especially is this true of those confined to the pernicious wastes of brick and stone, of alleys and gutters in our large cities during the none too blessed summer. Even a day in the country now and then is a godsend to them.

I cannot refrain from saying just a word as to the imperative need of effort we all, every citizen, should make to maintain and enlarge our open spaces and play-grounds, our river fronts, our public gardens, to establish roof-gardens especially, and every means by which the city child shall be aided in conserving its much imperilled health and widening the possibilities for reasonable growth. The power to do this should stand in direct relations to the school boards, and those of the educational offices hold a rare privilege and grave responsibilities in their hands which we must see that they use aright. The very dearest and healthiest enjoyments of a boy's life are connected with forms of warlike sports, some mimic strife or game of hunting, and unless opportunity be given to work out these wholesome and legitimate tendencies on a bit of open ground, the forces become explosive, revolutionary; therefore mischief and destruction or absolute viciousness ensues, to the hurt of the community (which, being abundantly policed, may be able to stand it), or worse, to the child itself, whose nature is thus embittered, and the outcome is disease not only of body but of character and morals. The child who begins life without a fair start, handicapped by some form of developmental shortcoming, if through the public fault, acquires a right to demand of the state thorough and skilful investigation. Medical men, teachers, and philanthropists, habitually assume that the child is a perfect piece of humanity, which merely requires moderate opportunities and encouragement to develop. They need much more of skilful guidance if they possess the average parent, who is, as a rule, too busy and too unwise to direct them intelligently in physical and mental habits. Home teaching and influences are theoretically best, but they can in most instances be enormously bettered, and the way to do this is to call the parents' attention to their responsibility and give them a few sound rules of guidance. Better, still, teach by example, and we should all strive to interest our children by our companionship, our intimacy.

The acquired causes of frailty in children are too extensive for me to attempt to enumerate and classify, and have to do, rather, with the whole subject of infantile disease and those effects which are not fully recovered from. The healthy organism throws off acute disease, and little or nothing will remain unless some organ or tissue be inflamed a little more than its power for repair, and this remains either damaged or over-susceptible to other morbific agents. There is much force in the arguments of those who assert that all disease has at its base the element of fatigue, and at some future time I hope to present my observations on this subject more thoroughly. During the process of development there are many periods wherein symmetrical growth is more readily disturbed and the effects of fatigue made manifest. Prolonged tension tends to kill not only growth, but that which should accompany growth,—namely, joy. Adequate rest, as has been alluded to many times in this paper, is not only an important but a complex subject, requiring careful study and attention. Direct results of fatigue have been shown to produce temporary color-blindness, loss of memory, and slowing of reaction times. It is quite within the experience of any careful observer of children that it may produce a great many other effects, ephemeral, temporary, and permanent. The working with dulled minds produces bad mental habits. Functional activities in a growing organism subject to strains unduly severe and prolonged inevitably result in disordered and probably diseased organs. Then, again, there are numberless causes which increase latent susceptibilities, or create them, and conspicuously lessen resistance to infective agents. The much-talked-of sewer-gas works rather in the way of increasing the susceptibility to diphtheria, typhoid fever, and other filth diseases, than as a direct agency in their spread. In so specific a disorder as rickets, thoroughly good opportunities may altogether overcome even a well-marked inherited taint, and, on the contrary, a perfectly healthy baby may develop a type of tissue soil which will result in rachitic feebleness.

Predisposition.—Each and all of us are exposed to forms of infection, poisons, and devitalizing circumstances the defence against which is a relative degree of inherent immunity.

Predisposition is that condition of the body in which causes that leave other persons unaffected call forth an attack of disease in one who is predisposed. Predisposition may be inherited or acquired, and is used generally to signify susceptibility to the infectious diseases by which the parts and forces of the body lose their defence against the invasions of pathogenic organisms. Immunity, on the contrary, is that state or condition of the body, its parts or its forces, by reason of which it is able to resist the development of morbid or infectious processes. These may be divided into natural, acquired, and artificial.

This question of predisposition and immunity is receiving a deal of attention at the hands of investigators nowadays, and most valuable studies are in progress in laboratories the world over. With the special studies of these we cannot here now deal, but it is one of the most important of the fundamental items of medical knowledge. It is well established that individuals vary exceedingly as to the degree of their predisposition to disease as well as to the variety of agents to which they are susceptible. Not only so, but this variation involves seasons, times of growth, and various conditions. A great many microbic poisons, or the causes which produce these, are present not only in the environment of most people, but are to be constantly found in the normal secretions of the mouth and respiratory tract. This is especially true of pneumococcus of Friedländer and the staphylococci. Others are more or less constantly found, many of less gravity, but even the deadly tubercle bacillus is round and about us at all times in any ordinary community, and may frequently be found not only under foot, but in the air all about us, and actually laid away in the cavities of our body ready to infect it upon occasion.

The proportion of persons predisposed to infectious diseases varies, as has been said, in some periods being almost universal, while in others limited. Epidemics can be explained by the varying equation due to predisposition and infective power of infective agents. Children frequently escape infection which attacks others all about them with precisely the same environment, and may pass through an epidemic unscathed. Nor is it true that we can always or, indeed, often predict who is and who is not thus susceptible. The most robust fall ready victims under certain conditions,—the feeble ones then resisting well. A little later this may be reversed, and the feeble ones are attacked.

As our knowledge grows we may be able to learn what are the factors that enter into these equations, and how we may be able to predicate one or the other. And, indeed, the present outlook is most hopeful for practical results. Koch suggests three specific causes of tuberculosis: first, destroyed or damaged ciliated epithelium; second, denudation of the protecting epithelium of the bronchi; third, deformities of the thorax and adhesions of the lungs, hindering full expansion and rendering them liable to retain secretions holding infectious matter in suspension. And yet these by no means explain susceptibility. There must be some essential change in the cells and juices of the body: anatomical, structural, blood-supply, lymph-supply, and the like; disturbed states of the leucocytes, the integrity of the phagocytes, and the blood and blood-serum.

There are also admitted to be "places of less resistance." Certain of the organs and tissues differ in their local cell weaknesses, as the throat is more susceptible to the poison of diphtheria, and they also differ in their resistive and destructive powers with regard to the microbes, and again to the anatomical and *temporary variations in* structure and also chemical differences.

Again, in addition to the barriers which nature has set up to the entrance of these destructive microbes, common conditions in the blood itself might be considered, but their discussion would carry us too far afield. The microbes themselves require a critical estimation as to their numbers, their varying states of virulence, and whether these—although of the same kind—are pathogenic or non-pathogenic microbes. The chief defence against the onslaught of germs is to destroy predisposition. How this can be done is not yet clear, but it lies presumably through maintaining perfection in the tissues, and especially in the blood integrity.

FORMS OF EXERCISES AND OUTINGS.

Every element of excitement, not forgetting over-solicitous attention and forced amusements, should be deprecated and avoided until the child acquires genuine vigor. Excitable children need to be watched with the utmost care, and the element of strain wherever detected should be sedulously removed. For very young babies merely keeping them in the open air is of great value. They should be sufficiently clothed, but not suffocated. The rule should be just enough and of the right kind, but not one bit too much; reserve overclothing to be near at hand always. In bitter cold weather veils are of great importance, always of sufficiently open mesh for the air to get readily through, but to protect from the wind. This, upon occasion, may be doubled, and had better be of dark color and natural tint.

For the poor, a piece of cheese-cloth will suffice. Veils should be washed or at least cleansed frequently, as a great deal of objectionable matter, both from the expired air and from floating dust, may accumulate upon them and be inbreathed again.

There is a prejudice against a baby or a child sleeping in the open air. If, however, it be sufficiently wrapped up no harm can result. During sleep relaxation occurs, especially with children of tender, leaky skins, and surface chills may arise, but this need not be if precautions are used. A valuable form of exercise and an adequate outing is had from allowing a little child from 3 to 5 years old to play about in a room with the windows wide open, and with its usual extra clothing on such as is worn when taking its ordinary walks abroad. This form of outing can be enjoyed anywhere, at any time, for any given length of time, and the perfection with which it may be controlled is of the greatest advantage. Furthermore, by these means the care-taker watching may remain with the child and utilize the time by pursuing some employment in useful fashion the while. An apathetic little one, who without constant urging will quietly sit down and do nothing, may be kept busy or amused; and, *per contra*, a rushing, bustling little one, who would readily overdo, may be thus held in check.

Children of weak lungs or insufficient lung-expansion or with a predisposition to phthisis may be taught regulated breathings to great advantage. Also, a useful measure is to institute for these some games, such as blowing through a tube, as shooting of peas through a tube at a mark,—a very practical means of increasing thoracic size and lung-power. An excellent in-door game is the old-fashioned bean-bag, at which the nurse can be a companion, and thus a perfect regulation can be established of the amount of energies employed. This bag of beans may be tossed back and forth so many times, increasing it from day to day and week by week. It may be at increasing distances. Both hands may at first be used, and by and by, as strength grows, the one hand or the other, not neglecting each. Both the right hand and the left may have their adequate employment, and even for stronger children this is of excellent utility.

The next step in this direction is the use of the medicine ball, which in our larger gymnasia has become quite the fashion. This so-called "medicine ball" is merely a sphere, made up of soft material, weighing from one to six or seven pounds, and covered with soft leather, the rough surface out. For little children it may be about the size of an orange, or preferably a little bigger, as being convenient to hold in two hands. This, passed or tossed from one to another, requires more skill than the bean-bag, and may be used in the same way that a foot-ball is thrown and caught, either with two hands or one hand, and soon a very large measure of skill is acquired and interest incited. When the regulation or prescribed amount of passing has been done, then it can be stopped for one or all the players. A watchful care-taker may learn this himself or herself, or act under specific instruction what to do and what not to do.

The most important element in all games is the incentive of competition, even if that competition be with one's own self. In all these exercises, which are devised for the purpose of keeping up a consistent interest, a much larger amount of activity may be used, and with less reactionary fatigue, than with any form of exercise which fails of this, no matter how eagerly one may pursue it as a measure. The converse point is, however, that vivid interest may cause a weakly person to do too much, even where he is endeavoring to do something with skill in which he himself is the only competitor. When, however, the competition is with others, the element of excitement is added, which may become hurtful to those insufficiently strong. Of games, many of the larger competitive kinds are manifestly unfit for children not overly strong. Match games of foot-ball, or even base-ball, are out of the question. Milder competitions, as in shinny or rowing, are of doubtful value ; but golf is a perfect game for the feeble and the strong, the young and the old of either sex.

The evidences of over-exercise in children or in weakly persons generally must be carefully rated. Mere breathlessness is no objection, and is easily recovered from if the organs be sound. Also, a pretty free sweating is harmless enough unless this goes to the point of saturating the underclothes, exposing one to secondary chill. If, however, with very small exertion sweating comes readily, and, instead of being accompanied by a normal reddening of the surface and the face, the person becomes pallid or bluish and loses the normal lustre or brightness of the eye, then caution must be observed. If after small exertion is seen a sort of trembling of the limbs, of the face and lips, this means that enough has then been done, and possibly too much. If seen habitually in the same individual, the amount of exercise must be limited until by slow degrees and other means adequate strength is acquired. Much soreness in the muscles afterwards is of no gravity, though often a source of anxiety.

It is a good point to note the face to be ruddy, pallid, or bluish, as an indication of benefit or harm from exercise; not that it is infallible, because some of the powerful athletes, men of greatest endurance, become pale while in action. This is, however, unusual. The pulse is a useful indicator too, and while, of course, even the most vigorous people who are in moderate condition have their heart-action immensely accelerated under sustained exertion, nevertheless this usually marks the limit of their capacity, and must not be kept up too long under sustained exertion, and if the person be in good condition, he is likely to have a full, strong pulse, only a little quickened over his ordinary state.

I once made comparison between four men climbing a high and very rough mountain, while on a hunting expedition. We were all in good condition, and one of us was an Indian boy of 18 years, rather slender, and not especially robust-looking. We all had loads upon our backs, but this boy had the heaviest, not less than seventy pounds. When, after a continued rise of over two hours, we reached the top of a certain eminence, I quickly counted the pulse of all present. And this boy was the coolest of the lot, and his pulse-rate was only a little over seventy, whereas the rest of us very nearly doubled that. When sitting quietly around the camp-fire his pulse and mine were just the same.

On another occasion, on a very hot day in summer, I compared my own son's pulse with mine, he being in perfect condition and 13 years of age, and I as strong as most men, but unable to maintain constantly that happy state, at the time perfectly well, though not in fit condition. After having reached afoot the top of a mountain about 1500 feet in height, his pulse-rate was only a little more than half of mine.

I have repeatedly examined the pulse and heart of boys under varying strains, such as a long foot-ball game or base-ball match, in which there was pretty constant action, and have noted that the condition of the pulse in those otherwise in equal condition varied very much with their excitability. And, inasmuch as this excitability of the person reflected upon the pulse means rapid using up of pabulum and rapid oxidation, therefore it is fair to assume that the rapidity of the pulse is a good indication of the using up of vigor. If the strain on the heart is too severe, the result will be a proportionate exhaustion. The tissues of young folk are so clean and elastic intravascular pressure can do less harm than in the adults. The heart not only needs to be of proper size, shape, and tissue competence to fit the body, but the quality of its vein-supply may be ample or lacking; when this is below par the heart acts slowly and laboriously, and is easily wearied and its force soon spent. This is shown in dyspnœa and palpitation, "air hunger," "besoin de respirer," if long continued the result is cardiac asthma. This phenomenon is frequently observed in the healthy under customary exertion; it is then chiefly due to the normal phenomena of insufficient elimination of the products of tissue waste, and is comfortably met by a few minutes' deep breathing or ample oxygenation, and most economically lying flat on the back, arms and legs outstretched, the head retracted and mouth open.

For (young or older) children the very best form of outing is to potter about a large garden, doing a little here and there and then resting awhile. The acts involved in gardening, the digging and pruning and various forms of activity essential thereto, are far and away the healthiest forms of exertion known to man. Indeed, the age of gardeners is unusually prolonged, provided they live wholesomely conditioned lives otherwise. Farm work is a different matter, involving greater strains. But the work of the garden, under intelligent supervision (or advice which is followed), is suitable for young or old, and is of the largest possible utility.

For girls or feebler boys the cultivation of flowers in boxes, or window gardening, is a healthful occupation. The care of small animals or of fish, as of birds or small four-legged pets, the making and caring for aquaria and such like things, are excellent, as sustaining interest and supplying some form of activity and variety without strain. The study of botany and field botanizing is among the best, on which I should be glad to dwell at length.

The study of birds in their natural haunts, watching their conduct, listening to and recording their songs, keeping the eyes upon their movements, especially with a field-glass, is of infinite interest. So, also, of the woodland moving things, not neglecting even ants and spiders, although using all due precautions in approaching the latter.

For older boys, even of the sickliest, provided they have the use of their limbs and reasonable integrity of their organs, there is no one form of life which so largely conduces to the building up of nervous force and muscular vigor as camping out in the woods. There is so much to be said on this subject, right sort of camp protection, and varying conditions that it is impossible to do more than allude to it with the statement that my experience has been fairly large, admitting of an expression of opinion, though few rules can be formulated short of a long essay.

The life of a boy under, of course, proper control in the woods far away from civilization is as near as possible to perfection, to aboriginal nature. He is freest there from all those minor and major disturbing influences, excitements, artificial restrictions on spontaneity which permits of healthy growth, mental and physical, encourages symmetry and fortifies against warpings.

I have seen a boy not ill, but still far from strong, about whom it was most natural to be gravely apprehensive lest the experiment should fail or prove disastrous ; nevertheless, without himself being particularly pleased with the experience, this camp-life succeeded in accomplishing what no other combinations had been able to do, even of the most carefully selected or expensive kind. The irregularity of the feeding, the lack of sleeping comforts, the loss of various civilized necessities notwithstanding, were offset with immense effect by the simplicity of the life, the element of independence of little things ordinarily provided and thought to be needful, the absolute naturalness of the motions and attitudes, and things done, the early hours to bed, and the even earlier to rise, the constant breathing of perfect air, whether this be night or day, or wet or dry, it mattered not, and many other points too numerous to mention, produced a condition which when in doubt it is always well to hopefully attempt.

Morals and religion in these surroundings need little teaching,—a hint will suffice, and this, to the narrowed mental horizon of a young person, is a vastly important point,—and nowhere better than in the woods or wilds. Confusion is usually produced in the concepts, and is a much worse thing than ignorance, which is a clear field for the understanding.

DEVELOPMENT OF MUSCLES.

There is still an impression prevailing among even the best teachers of physical culture that the development of the muscles has of itself a particularly valuable influence upon the general constitutional vigor. A good deal of attention is directed by writers on this subject to various means of cultivating muscular power. This is true only to a very moderate extent. To be sure, the exercising of the muscles can scarcely be carried on independently of certain collateral co-ordinative acts involving the vital organs. By quickening their activity by that of the circulation and stimulating the ebb and flow of the blood throughout the motor mechanism, this does improve nutrition, and, to a certain degree, enhances generally the activity and power of the body. Exercising the muscles in vigorous persons with sound and competent organs adds to the usefulness of the trunk and limbs, enlarges their capacities, and is of permanent value. In the class of cases under discussion this is also true, but with many important modifications.

Let us review for a moment the different kinds of muscular actions, their mechanism, and their physiology. There are the voluntary and the involuntary muscles; ordinarily only the former are considered under the subject of exercise. The effect upon the involuntary muscles is a very important one, however, and precedes and should proceed *pari passu* with the stimulation of the voluntary mechanism. It is conceivable, and, indeed, I have seen instances which illustrated this, where individuals have acquired a species of muscular monstrosity by having their voluntary muscles so exercised as to increase their size and power out of all proportion to the organic capacity of the individual. This produces an overgrowth of a kind that is not only almost valueless, but a distinct menace and an evil example. In the exercise of the limbs we may divide the kind of energy into those of swiftness or speed and power, which may again be divided into the combination of both swiftness and power. In acts of muscular swiftness we have a very intimate connection between the motor centre and mechanism in which the centre is more exercised than the limbs in proportion as we try to produce accuracy of movement. In any muscular action involving mere power, as, for example, lifting a dead weight, there is very little effect produced upon the motor centre, but the strain is directly upon the muscle used, collateral muscles acting with this, the tendons, and framework, and particularly the heart and peripheral vessels. In acts which involve both force and swiftness along with accuracy, there is a large complexity in the physiological act and the most widespread strain upon the mechanism, as, for instance, rowing a boat as rapidly and as long as possible. There is again another form of muscular activity which involves a very considerable strain, but which is too often overlooked, and that is the physical tension illustrated by the perfect muscular equipoise of a cat lying in wait for a mouse, in which almost every muscle of the body is used, controlling the nervous mechanism including the brain, which here is in a form of concentrated tension. This latent energy produces very considerable fatigue, and directly in proportion to the degree of excitement and concentration of attention. It is familiar to all, and most of us can appreciate how fatiguing it is to stand for a long time, or to hold on to an object, as even a baby in the arms, the tiller of a boat, or the reins while driving a horse. The strain is doubled by an excitement which may again be greatly exaggerated to the hypersensitive or over conscientious person in the performance or continuance of an act. It is not so familiar, perhaps, but equally important to realize and prevent that sort of fatigue which is liable to occur in those who must remain quiet, but who excite themselves by carrying out conspicuous acts of another in their minds while watching them. For instance, an excitable person looking at a match game of foot-ball, influenced by eagerness for the success of one side, involuntarily puts forth an immense degree of energy by his desire to help along the others. Indeed, I have known of invalids, who, while watching such contests where one of their own family was contending, became seriously exhausted by just this sort of passive strain or expectant attention.

It should be borne in mind that there is a distinct physiological relief produced by the active forms of exercise which results in temporary breathlessness when followed by periods of rest. Physical and mental tension is relieved by profuse sweating; excitement is relieved to a great extent by over-accumulation of carbon dioxide, which is itself a sedative. I am convinced that I have suffered more fatigue from standing watching over the heads of a crowd an exciting foot-ball game than any individual member of these gladiators who had a much freer scope for their activities and were more suitably dressed for their work, and, above all, were properly trained as well. Free action in a trained athlete is a dear delight; when out of training only is it a distress.

It is well to bear in mind that for children intrinsically weak (it may be both in their muscles and their nervous force), and whose organs may also be much below the average power of their other parts, muscular exercise must be hedged about with many safeguards and thoughtful modifications. It is doubtful whether such children should be even given much special exercise for their muscles alone, such as pulley-weights, dumb-bells, and gymnastic efforts, unless these be of the lightest and in combination with other things, while it is equally important that they should not be allowed too large a scope for exercises of a complex nature. Deliberate and continued acts of which carpentering and gardening are familiar types, are the best. Indeed, the use of tools, involving as it does interest to the mind, is second to none in value for young or old, weak or strong. Complex exercises, involving both force and swiftness, should be gradually worked up to. The most perfect form of gradual approach is in the form of regulated exercises devised by the Swedes, wherein the muscular acts are reduced to their fundamental principles in force and direction; and in the hands of a skilful operator a person is led step by step from the simplest acts to the most complex and forceful ones, and during this process the organs also grow accustomed to the graduated strain. When the individual is vigorous enough to perform little acts of skill, incentive is thereby added, and the muscular work is better endured. By and by minor competitions have their place, and so long as these are held in due restraint all is well, and great benefit results from a judicious continuance. If incentive becomes gradually merged into excitement, then a peril threatens. Exciting competitions are only for the strong; innocent incentives in the form of music during muscular exercises is often added with advantage. This is particularly the case with the German Turn Verein and Turn Gemeinde; indeed, more than a passing allusion should be made to the Turner Bund, which in this country is now a very large and wide-spread factor and almost always for good. Here twice a week, as the custom is, the people come together, from the very young children—not babies, of course—to quite elderly people in their separate classes, doing work suited to their capacities, and usually to the sound of music, take a good hour's exercise, which being done together involves a little competition of individual skill and social intercourse.

Dancing is a most wholesome exercise if only it be not superadded to or grow into undue excitement. Fancy dancing for girls is of special value, graduated, of course, as it brings out the graces as well as strengthens the muscles, teaches equipoise, and especially benefits the loins and back, the weakest place, and usually the most undeveloped part in females.[1]

DEVELOPMENT OF THE NERVOUS SYSTEM.

The development of the nervous system has points of similarity to the growth of a bank account, is subject to somewhat the same variations ; at times inadequate, again fairly sufficient, on extreme occasions running so low as to come to the verge of being overdrawn, but under no circumstances can it be excessive. Nervous force grows most satisfactorily by slow and economical degrees ; excitements of all sorts are perilous, inducing a waste in one way or another, and only robust natures accumulate enough to squander, lest, peradventure, the account be suddenly overdrawn and bankruptcy ensue. It is popularly admitted that the world is swayed by vigorous nerve force. Language is replete with terms, making nervous energy synonymous with courage, endurance, wisdom, and all those factors, in short, which are embodied in the term ''success.'' It is alone the lack of nervous force which sometimes makes inefficient an otherwise sound bodily organism. On the other hand, a feeble construction, endowed with vigorous nervous force and energy, constitutes an efficient engine. An adequate accumulation then of energy in the nerve-cells and centres is the very fountain and mainspring of life. As we possess little or much of this are we useful beings ; whether our actions are mainly mental or physical, it is the same. When this energy is exhausted or run down, it must be wound up again, but, unlike the clock, it requires a long period of time to accomplish. Moreover, during this time all the vital organs tend to deteriorate structurally while this controlling force is withdrawn. To acquire nervous vigor its growth should suffer few and small interruptions. We see among country folk, laboring men, and savages natures which are relatively little disturbed by protracted drains on their vitality, especially of the kind which induces physiological irritability in more complex beings, and this is due largely to their slow growth and simplicity of life, slowly storing up cellular energy. Such folks become not only well filled with force, but tenacious of it and well balanced. If their store be drawn upon they can well sustain the tax. Children whose lives are one long monotony may not be so bright and alluring, but are far more stable, better able to labor and endure. Their observation is simpler and slower, but their concepts and inferences are apt to be clearer. This storing up of vital energy should begin before birth. The about-to-be mother should sacrifice something to enable her to live quietly and healthfully. A vast deal of harm would be avoided as well as trouble to the mother and anxieties for her child if this prenatal period could be spent under natural and wholesome conditions. We have scarcely begun to know much about maternal impressions, but they are of deeper influence and significance than can yet be explained. Hurtful impressions are thus transmitted beyond a doubt, and beneficent ones even more truly and constantly. It is conceded that the finest known specimens of children are found among the British nobility, and, as has been said elsewhere in this paper, our insular cousins are more enduring than we, certainly in physical competitions, as in long-distance running. The conditions of their early growth and development are hedged about with unusually wise safe-guards. If, as has been objected by sentimental observers, these children see less of their parents than those of humbler folks, they are provided with the best possible substitutes in the way of care-takers and teachers; they are reared under the most perfect conditions as to surroundings, almost altogether in country places; whereas those children who are compelled to live with their parents—who, having a good many demands upon them, are unable to devote their best energies to the care and instruction of their offspring—are liable to grow up hap-hazard, and fall into many dangers, in spite of the best affection and intentions. Indeed, there is a very great peril to a child who is provided with too much or too solicitous affection from unwise parents, and, although home influences are inestimable in the way of character growth, nevertheless the exigencies of modern life too often call away the best energies of the parents, and children come in for what is left. A word may be said in passing of children who are backward mentally, a condition which frequently is only relative, being a state of instability of the nervous equilibrium, from which good or evil results may follow, depending upon the same conditions which help or prevent the growth of the nervous force in the body elsewhere. By far the most important considerations have to do with the acquirement of physical invigoration. If mental feebleness be once recognized, it is beyond measure important for the parents to seek skilful advice and to follow it closely. The education of the mind and of the body should go hand in hand, and all forced forms of mental training should be avoided. If the parent is able and willing to be the care-taker, and spend a good deal of time in the open air, especially the fields and barn-yard, thus insidiously teaching and moulding both mind and body, sharpening observation, and aiding in the formation of clear mental concepts, immense good can be accomplished, and not seldom the prevention of serious mental warping.

---

[1] See article by author elaborating the subject on "Puberty in Girls," Pædiatrics, July 15, 1896.

DEVELOPMENT OF MIND.

It may seem scarcely necessary to speak of the development of mind in pursuance of the subject of this paper ; nevertheless, it is important that a few remarks be made as tending to show the connection which the brain and its processes have with enfeebled bodies. We occasionally see precocious minds endowed with very feeble envelopes. If such brains are over-encouraged, they are capable of using up too readily what little residual vigor there is in the entire organism. Precocity is a manifest peril ; it is always of doubtful value ; the very abnormality is evidence which should put us on our guard that we should aid in preserving not only the organic activities and framework, but, above all, the integrity of the mind itself. Other things being equal, the mind should receive little or no especial attention until the rest of the organism is fairly well repaired and put in working order. Actual instruction had better be delayed, and the teaching should always begin with the simplest possible object-lessons ; suggestions such as emanate from well-conditioned, wholesome-minded folk should surround the child, even then keeping very close to simple, uncomplicated truths and their practical application. The method of teaching as outlined by that wise and good man Froebel is the healthiest both for the weak and the strong, and no system has ever been devised which approaches it in wholesomeness, certainly for very young children. Along with physical weakness there is inevitably a certain lack of mental vigor, and this must be particularly borne in mind, no matter how intelligent or bright a child may seem to its admiring parents or worshipping relatives. Mental processes are purely the outcome of physical activities, and there are in history conspicuous instances of great intelligence, and possibly wisdom, pointed out in wretchedly undeveloped bodies, yet such are always open to question, and in the ordinary course of every-day life we certainly cannot assume that this unnatural juxtaposition is probable. Therefore, it must be assumed from the outset that in a feeble body the mind must be handled with unusual delicacy and judgment to enable it to develop according to its possibilities, no matter how highly or hopefully we estimate these. At least the regularity of the organic activities must be fairly good to enable an organ of such astounding delicacy as the brain to grow naturally in size and power, and there must be maintained a very high order of cellular integrity to enable that organ to reach even a fair degree of energizing capacity and delicate differentiation. If this be true of early budding infancy when the whole organism is largely that of a vegetable, and until the time of early adolescence when the brain reaches its normal bulk, it is even more important that from thence on to the time of maturity, which is about the twenty-fifth year, every care be exercised to enable the natural perfection to be reached. When teaching then is admissible for a little one, it is a matter of much difficulty to decide just how much and of what sort this shall be, depending, of course, upon the material with which one has to build. However, the ordinary method of teaching language, and dividing it up into letters and constructed words, leading from thence to the principles of language, and finally to abstract thought, clothed too often in almost incomprehensible phrase, is certainly far from wholesome for those of the weaker sort.

Simple inductive reasoning from natural objects, of their quality, habits, and means of growth, is the sort of thing that should be pursued. The average teacher knows pitiably little about what the mind of man in this budding state is capable of doing. I would urge upon all who have any desire to know the truth to begin by learning what the ordinary concepts of a young child are and how they shape themselves, and how language, as ordinarily learned by them, so misleading, is capable of conveying thought.

EXERCISE will do for your body what intellectual training will do for your mind,—educate and strengthen it.

ANY man who does not take time for exercise will probably have to take time to be ill.

THE ANNALS OF HYGIENE
PUBLISHED MONTHLY
SUBSCRIPTION TWO DOLLARS
A YEAR, IN ADVANCE.
Address all communications to
UNIVERSITY OF PENNSYLVANIA PRESS

EDITORIAL

All subscriptions to "THE ANNALS OF HYGIENE" are taken "until ordered discontinued," and no agent has authority to make any other arrangement. At end of time to which subscription has been paid or promised, a bill for a year in advance, with return envelope, is sent, and if journal is no longer wanted, the subscriber should mark "Discontinue" on the bill and return to us. A failure to so return bill is considered an order to continue.

COMMUNICATIONS SOLICITED.

We are always anxious to receive short communications—500 to 1000 words—on practical subjects pertaining to hygiene. To any one sending us an acceptable article, we will forward THE ANNALS OF HYGIENE for one year *free*.

Bathing.

WE desire to ask a careful perusal of the article on this subject by Dr. David Warman, of Trenton, N. J., published elsewhere in this issue, because it is a masterly discussion of a subject than which there is none more important in the whole domain of hygiene. Leaving all religious questions entirely out of consideration, there can be no doubt that the Jews were and are most earnest *practical* believers in the efficacy of hygiene.

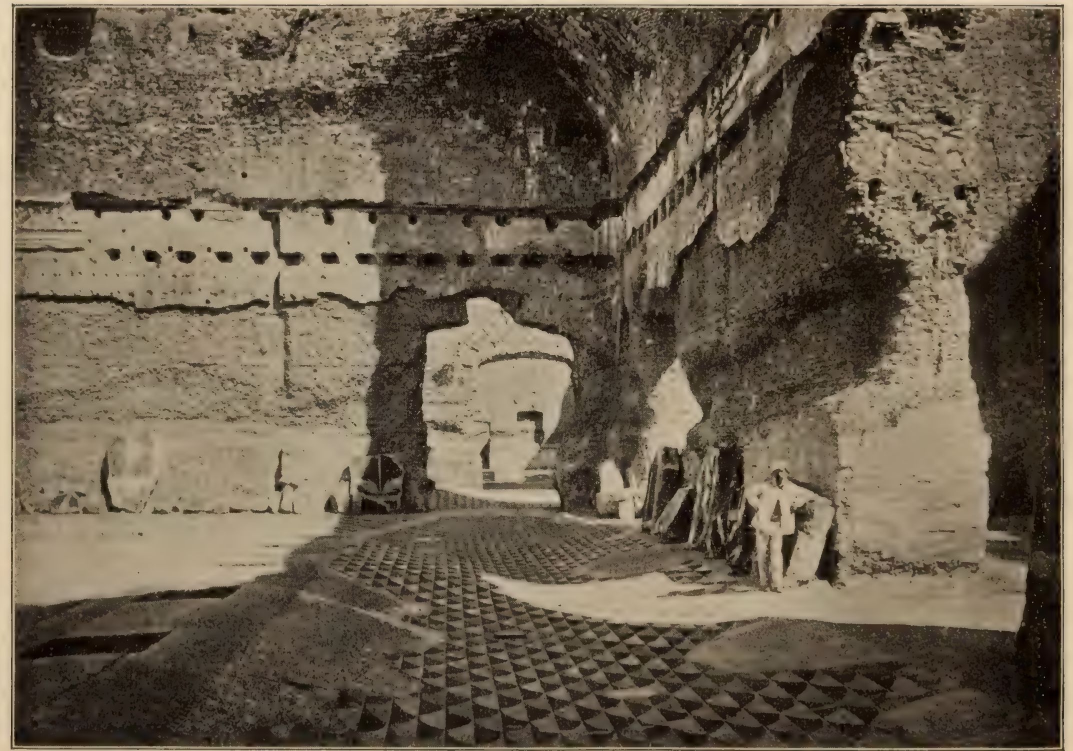
Moses was the greatest of sanitarians; great not only because he taught the doctrines of hygiene, but still greater because he was able to induce his followers to practise them.

Whether it had the preservation of health for its motive or not we will not attempt to decide; but, to our way of thinking, the fact is very clear that very much of the religion of the Jews had, and still has, for its foundation the doctrines of hygiene.

Well, now, among the Jews, in ancient times, there sprang up a sect called *Hemerobaptists*, so named from their observing a practice of daily ablution as an *essential part of religion*. St. John the Baptist belonged to this sect before he became a Christian.

Two thousand years ago Rome dominated the world. The health and strength, both physical and mental, of the Romans in those days was so great that the nation was irresistible, and it

Ruins of the Famous Baths of Rome.



Ruins of the Famous Baths of Rome.

conquered everything that it attacked, excepting nothing from its attacks.

In those days of unparalleled physical supremacy the most popular thing in the Roman empire was BATHING.

Not only were magnificent bathing establishments attached to the homes of the wealthy, but all over the empire enormous public buildings were erected devoted to the purposes of bathing.

That all might be clean, the charge for a bath in one of these buildings was only *one-eighth of one cent;* yet, whenever an emperor wished to make himself particularly popular with the people he would throw open these baths free of cost. Is it any wonder that a people with whom cleanliness was the most popular of all things should have enjoyed such health and vigor?

The magnificence of many of the baths of Rome and their luxurious arrangements were such that some writers, as Seneca, are quite lost in admiration in their description of them. These buildings were often of immense size,—that of Diocletian being 200 feet long,—and were adorned with beautiful marbles.

The halls were crowded with magnificent columns, and were ornamented with the finest pieces of statuary. The walls were covered with exquisite mosaics that imitated the art of the painter in their elegance of design and variety of color.

A perpetual stream of water was poured into capacious basins through the wide mouths of lions of bright and polished silver; water issued from silver and was received on silver. "To such a pitch of luxury have we reached," says Seneca, "that we are dissatisfied if we do not tread on gems in our baths." In those days of health and vigor the most attractive resort in Rome was the bath, and the people appreciated this fact; in our day the decorator's art is enlisted that the *saloon* may be made the most attractive resort, and the people, unfortunately, appreciate this fact, also. Here is a lesson for our temperance friends. The mass of humanity does not think for itself; it is guided by impulse, and will seek that which is attractive to the senses. A beautifully and artistically decorated, comfortably warmed, and brilliantly lighted saloon will attract more human moths than a dull, dismal, bare, and, often, *dirty* coffee-house.

The emperors of ancient Rome displayed more knowledge of human nature than seems to be enjoyed by the temperance leaders of to-day; they did not attempt *compulsion;* they wisely coaxed, and they succeeded.

Along in the fifth century we find the glorious bathing establishments of Rome falling into decay, and, at the same time, we find that Rome is no longer "mistress of the world." Gradually, as cleanliness became more and more of a "*lost art*" among the Italians, did the sanitary condition of the country (which is an index to the inclinations and habits of the people) become more and more deplorable; personal uncleanliness begot municipal filth, until the descendants of the God-like warriors of Julius Cæsar were roused from their sanitary lethargy by the frightful ravages of cholera a few years ago, a scourge that could not have entered the city of Rome in the days of her magnificent baths and unlimited use of pure water.

Reaction always follows excess; hence the excess to which bathing was carried in ancient Rome probably accounts for the reaction that resulted in its neglect, from which we draw the same old lesson of *moderation*, so often preached.

Rome enjoyed great health and power, and one element of this health and power was the cleanliness of its people; but, carried to excess, the inevitable reaction followed, and filth and dirt, equal in degree to the former cleanliness, was one cause of the downfall.

The pendulum of a clock swings just as far in one direction as it does in the other; push it with your hand six inches more than usual to the right, and it will swing back six inches more than usual to the left. So excess is always followed by a corresponding reaction.

While, therefore, we learn from Rome the value of bathing and cleanliness, let us also learn from Rome the danger of excess, and profit thereby.

You will often see dirty persons, those whose skins are so unclean that their presence is really offensive, yet who present the appearance of good health, and such cases make you sceptical as to the necessity of cleanliness. But you must first inquire as to the vital inheritance of these persons; perhaps they have inherited so much vigor that they are able to keep healthy even in spite of this want of cleanliness, while you must also remember that this condition of the skin is throwing extra work upon the internal organs, in consequence of which they will not last as long as they would if assisted in their work by the healthy action of a clean skin.

There is also an æsthetic aspect to this question of cleanli-

King Humbert.
The ruler of dirty and degenerate Italy when she was decimated by cholera.

ness. If you find the odors from an unclean person so unpleasant and offensive to your sense of smell, you must remember that, if unclean, your presence will be equally disagreeable to others. Everything derived from the earth should be returned to the earth ; and if you do not wash the dead organic matter from your skin and return the water containing this matter to the earth, these particles of decomposing matter, detached from your skin to float in the atmosphere, will be inhaled and swallowed by yourself and others.

As to the temperature of baths : the ancient Romans preferred warm baths, while in Japan, where *hot* baths are the rule, *rheumatism* is an almost unknown disease. A cold bath is that in which the temperature of the water is from 30° to 60° F. ; a cool bath is from 60° to 75° F. ; a temperate bath from 75° to 85° F. ; a tepid bath from 85° to 92° F. ; a warm bath from 92° to 98° F. ; and a hot bath from 98° to 112° F.

The Japanese consider anything below 110° F. too cold, while anything above 120° they consider unpleasantly hot.

While, for public bath-houses, we heartily commend the method described by Dr. Warman as being the most practically efficient, yet for the private houses of those who can afford it we would suggest the following ideal bath. In a large tub full of *hot* water, to which a tablespoonful of "household ammonia" has been added, lie down, with only the head exposed, and soak for ten minutes. Then, standing up, thoroughly soap the whole body with a *pure soap*. After this turn on a *hot* shower, and, while the water falls from a height on the head and trickles down the body, wash the head thoroughly. This will carry the soap and the dirt with it away from the body, and, having said your prayers, and paid your subscription to THE ANNALS OF HYGIENE, you can go to bed with a clean body and a clean conscience.

New Jersey Sanitary Association.

THE Twenty-second Annual Meeting of the New Jersey Sanitary Association was held at the Laurel House, Lakewood, on Friday and Saturday, December 11 and 12, 1896.

The first paper was read by Dr. James A. Exton, entitled, "Report of Committee on Improvement of Sanitary Administration in Townships."

The report called attention to the fact that typhoid fever is now a disease of the rural districts, due to the laxity of sanitary administration in townships. Criticism was made of the fact that township boards do not secure isolation of cases of diphtheria, which, in view of the well-known virulence and contagiousness of this disease, was largely responsible for its spread and development. The statement was made that diphtheria causes annually more deaths than any other disease save tuberculosis. Another point mentioned was that an exceedingly small amount of money is appropriated by townships for health purposes, which would very largely account for the lack of efficiency in the administration of sanitary measures. The report concluded by making the following recommendations :

(1) By law provide that in each township the sanitary authority shall be exercised by one official.

(2) The chief local health officer in townships should be a graduate in medicine, and should be selected under civil service rules, and his term of office should be five years.

(3) The examination of applicants for the office of chief health officer in townships should be conducted by the State Board of Health.

(4) The appointment of the chief health officer in each township should be made by the Township Committee from an eligible list furnished by the State Board of Health.

(5) No township health officer should be removed except for cause, and vacancies should be filled for the unexpired term in the manner provided for original appointment.

(6) Township health officers should conduct all official operations in accordance with rules and regulations approved by the State Board of Health, and they should make report of their doings at stated intervals, and upon request to said board and also to the Township Committee.

(7) All suits for the violation of any local sanitary rule, regulation, or ordinance should be begun at the instance of the township health officer, and they should be brought to trial by the district attorney of the county, but no such suit should be commenced until the necessity for its being instituted has first been agreed to by the State Board of Health.

(8) All sanitary inspectors in cities, towns, boroughs, and villages, as well as in townships, should be appointed from an eligible list furnished by some duly authorized educational institution.

In the discussion which followed the reading of this paper exception was taken by some of the speakers to the recommendation that health officers should be graduates in medicine, it being claimed that this was not absolutely necessary, and for some reasons not desirable; but the opinion seemed to prevail that in most townships the physician is the only competent person.

In connection with the last recommendation it was stated by Dr. Henry Mitchell, secretary of the State Board of Health, that the officers of Rutgers College are at present considering a plan for issuing certificates of competency for the office of sanitary inspector, with a view at some future period to establishing a regular course of study in this line.

At the evening session an excellent address upon "Progress in Public Hygiene" was delivered by Professor Brackett, of Princeton. That doctor traced the growth of the knowledge upon the subject from the earliest beginnings to its present advanced stage, attributing it in great measure to the wonderful development of the science of bacteriology. The speaker quoted from the Old Testament to show that Moses, the great law-giver, was not unmindful of the requirements of hygiene, and also from Hippocrates, showing that he, too, noted "the conditions of the earth, the air, and the water." Continuing, the speaker referred to observations made in more recent times. Those of Dr. Oliver Wendell Holmes, made nearly half a century ago, upon the close relation between cases of erysipelas and puerperal fever, and Dr. Bowditch, also of Boston, upon the conditions favoring the development of tuberculosis, were valuable as pointing the way for the later workers in the realm of bacteriology.

Dr. Brackett made an interesting sketch of the great advancement made in the application of hygienic principles since the discovery of the specific germs causing diseases, such as tuberculosis, diphtheria, cholera, etc. He considers the application of our knowledge concerning the diphtheria bacillus and its life history to the production of the antitoxin, as a remedy and an immunizer, to be the greatest achievement of medicine since the wonderful discovery of Jenner, a century ago.

A paper by Dr. Samuel H. Durgin, health officer of Boston, Mass., upon the "Influence of Schools upon the Spread of Diphtheria," was an instructive exposition of the methods pursued by the board of health of that leading sanitary city in the matter of school inspection. A corps of fifty physicians is employed to make, each in a designated territory, a daily inspection of the schools and children shortly after the opening of the morning session. Particular attention is given to those pupils found suffering from throat troubles, and suspicious cases are at once dismissed and the board of health notified. This plan has been found to work remarkably well, as many cases of diphtheria are thus discovered in their incipiency, and the diagnosis verified by the bacteriological laboratory.

Dr. Durgin gave an interesting account of the efforts of the Boston Board of Health to induce city fathers to provide the funds for this important work. It was only after four or five years' constant effort, on the part of the board, and then only when stimulated by a rather alarming outbreak of diphtheria, that councils finally consented to grant an appropriation for this purpose. The compensation granted each inspector is $200 per annum, plus the honor and satisfaction, as Dr. Durgin naïvely remarked, of engaging in a work of great public importance.

Colonel George E. Waring, Jr., commissioner of streets of New York City, spoke upon "The Influence of Clean Streets upon the Health of our Cities."

The well-known official did not present any figures bearing upon the subject, but told with some detail the methods employed in cleaning and keeping clean the once filthy streets of the metropolis. The colonel referred particularly to the difficulty encountered in securing the banishment of the 60,000 or more trucks, which, when not in use, obstructed the streets of the city, preventing either the use of or the thorough cleaning of those streets. He described humorously the many objections raised to the removal of the trucks, some claiming that the immense business of New York City would be seriously interfered with if the trucks were not allowed to remain in their usual convenient resting place. They were finally removed, however, and an enormous extent of street surface thus made available for traffic, and being kept entirely clean, affording an immense play-ground for children by day, and in many sections a cool, sleeping place by night, of inestimable sanitary value.

It was stated that physicians, apothecaries, and dispensary *attachés* on the east side reported a great decrease in affections of the eyes, nose, and throat since the beginning of the era of clean streets.

The evening session closed with a description of the "Water-

Supply of Newark," illustrated with lantern views, by Herbert B. Baldwin, chemist of City Health Board, Newark.

The third session was begun by the reading of a paper by Dr. H. D. McCormick, of Princeton, entitled, "Bacteriological Investigations, and the Advantages offered by the State Laboratory."

In the remarks that followed the reading of this paper, it was stated by one of the speakers that the bacteriological laboratory, which it had been announced was maintained jointly by the State Board of Health and Princeton College, is in reality maintained by the generosity of two of the members of the association, Professor C. F. Brackett, of Princeton, and Dr. Henry Mitchell, secretary of the State Board of Health. It was resolved to instruct the Committee on Legislation to appear before the Appropriation Committee of the next legislature and endeavor to secure funds for the continuance of the work of the laboratory.

WALTER E. REYNOLDS, M.D.

Health Office, Atlantic City, N. J.

Pain and Rest in Diphtheria.

REST is one of the sweetest words in our language, and in the management of no disease is this more true than in diphtheria. In keeping with the experience of Professor T. E. Murrell, ex-vice-president of the American Medical Association, and Dr. Pollack, of St. Louis, who have found antikamnia valuable as a reliever of the pain of nocturnal earache, it has also been found of great value as a sleep-producer in these cases. Given in doses of two and a half to five grains every two to four hours, there is no depression, nor have other than satisfactory results obtained. Dr. Eggers, of Horton Place, St. Louis, reports in the treatment of an attack of diphtheria, in a member of his own family, that, to obtund the pain consequent upon the injection of antitoxin serum, which ordinarily lasts from three to four hours, he exhibited antikamnia internally, securing relief in a few minutes. In the treatment of any neuroses of the larynx, coughs, bronchial affections, la grippe and its sequelæ, as well as chronic neuroses, clinical reports verify the value of codeine in combination with antikamnia, the therapeutical value of both being enhanced by combination.

NOTES AND COMMENTS

Sleep Experiments.

Professor Patrick and Dr. J. S. Gilbert, of the University of Iowa, in the *Psychological Review*, record experiments made to determine the effects of prolonged loss of sleep. Dr. Gilbert and two of the University teachers were kept awake four days and three nights. One suffered most on the second night, another on the third, the other experimenter was not affected. All gained in weight. The power to lift steadily decreased, and memory and power of attention were also lessened. All powers were completely restored after a sleep of eight or ten hours.

Night Terrors treated by Music.

Bestchinsky (*Vratch*, 1896) has tried the effect of instrumental music in calming the night-terrors of a child three years old. The child awoke every night in a terror that could not be allayed by any of the ordinary means. The auther advised that a piece of music be played in his hearing, choosing one of Chopin's compositions (Valse Brillante, No. 2). From the first evening the child slept without waking. After some days the treatment was interrupted and night-terror recurred. It was prevented by resuming the treatment for a time. The cure was definitive after several months. Equally satisfactory results were achieved by this treatment in the hands of Dr. Berberoff, a friend of the author's.

The Home-Hiring Tendency.

The 1890 census returned the total number of families in the United States as numbering 12,690,152. Of these the number owning and occupying mortgaged homes and farms was 2,250,000, leaving 10,440,152 families occupying hired homes and farms, or those they own free of incumbrance.

The pace at which we are becoming a nation of dwellers in hired homes, alike in the city or country, may well cause patriotic men, who understand that States are not in a good way when their wealth tends to concentrate in fewer and fewer hands, to put on their thinking caps.

At the height of its power and magnificence—when, indeed, it seemed to be at the most prosperous point in its history—ancient Rome had a population of 1,000,000 souls. Its records show that at that time 150,000 of its families were dwellers in tenement houses, paying rent, while less than 2000 other families owned their homes, which were literally palaces. That state of things ended, as we all know, in a catastrophe. And it has been well said that "history is philosophy teaching by examples."—*New York Recorder.*

Woman and her Diseases versus Gynæcology.

We are coming to a period of transition in the practice of surgical gynæcology. Instead of essays on the treatment there are studies on the cure and prevention. Preventive medicine, hygiene, sanitation, and sociology are now popular themes for medical societies. Philanthropy has taken the cue from medicine, and is attempting to form a citizen rather than to reform him. Woman's sphere has lately widened, until now it is as wide as man's. Has she equipped herself for this race intelligently? Look at the average woman in the cities; the average stenographer, saleswoman, the business woman, do they not daily outrage their bodies by compliance with the dictates of fashion in food, dress, and habits? A woman's generative organs should not be doomed because she has need to visit the gynæcologist. A good diagnostician must know as much about women as about disease, as much about environment and social and domestic relations as about pelvic lesions. Gynæcologists should lead in the reform of those conditions which are detrimental to the health of woman.—*Henry P. Newman, M.D., Chicago.*

A Tree's Metamorphosis.

In order to ascertain the shortest time required to convert the wood of a standing tree into paper, and the latter into a journal ready for delivery, the experiment has been made at Ebenthal, by Menzel & Co., paper and wood-pulp manufacturers. For this purpose these trees were felled in a near-by forest, at 7.35, and carried to the manufactory, where they were cut into pieces twelve inches in length, these being at once decorticated and split, and, thus prepared, the material was afterwards raised by an elevator to the five defibrators of the works. The wood-pulp produced by these machines was then put into a vat, where it was mixed with the necessary accompaniments, and this process finished, the liquid pulp was sent to the paper machine. At 9.34 in the morning, the first sheet of paper was finished, the entire manufacture having thus consumed two hours, lacking one minute. The owners of the establishment, accompanied by a notary, then took a few of the sheets to a printing office, about two and one-half miles from the works, and at 10 o'clock a copy of the printed journal was in the hands of the party, only two hours and twenty minutes having been consumed in converting the wood of a standing tree into a journal ready for delivery.

Does the College Woman Marry?

Among questions that are interesting as well as pertinent and timely, now that so many hundreds of women are preparing to enter the many higher institutions of learning open to them with the coming of autumn, are such queries as these: Does the college woman marry? Is the higher education an advantage to her in finding the right fellow, the ideal hero of her choice? And after that, is it an advantage to her as a home-maker and in the making of good society generally?

A law of averages rules everywhere—even in matters deemed most subject to personal tastes and choices. Cupid himself could do no more than smile at statistics while admitting their authority. Some English statistics are at hand relating to the leading colleges for women in that country. Some of them are conveniently put together in an article in the Nineteenth Century. It is to be hoped that similar facts may be ascertained as to women who have graduated from colleges in this country. Out of 1486 women who have been students in English colleges for women at Newham, Somerville, Holloway, and Girton, only 208 are reported as having married, while 600 are engaged in teaching. It is stated that one in ten of those who take the honors at Cambridge examinations marry; one in nine at Girton who take similar honors marry, and that two in five who take the ordinary degree marry.

It is no doubt true that the more highly educated woman is measurably more difficult to please. She has also a somewhat increased sense of independence in the feeling that she is competent, if need be, to take care of herself. At the same time it is perhaps equally true that a relatively smaller number of men have the courage to think highly enough of themselves to propose to her. And so the rule works both ways. But it is well to remember that averages in this matter are liable to change within a few years. Just now is a transition time for all the industries and all the occupations. This is especially the case with matters which most concern the new woman. The conditions, associations, methods, aims of education, are undergoing reconsideration and change. One of the most important and absorbing of all the industries in America is that of education. And educated women, married or unmarried, are having a continually increased partnership in it. Human nature, at any rate, is not likely to change. To marry and give in marriage is a fundamental need which no wholesome education, however high or broad, can, in the long run, ever push far to one side. The unmarried men, if they are fit to have good wives, have no reasons for alarm because of the colleges being open to women. —*Chicago Times-Herald.*

Contagiousness of Tuberculosis in Hospitals; Isolation Recommended.

The committee appointed by the municipal authorities at Paris to investigate this subject, report the necessity of separate quarters for tuberculous patients, or, at least, the necessity of separating them from the rest in special wards appropriated to their exclusive use in the present hospitals, which they claim is feasible. Also the decentralization of tuberculous patients by removing them to special sanatoria in healthy localities. Letulle also suggests the establishment of curable tuberculosis colonies in Algiers and Corsica. They also demand that the patients and attendants should be carefully educated to understand the necessity of prophylactic measures, with penalties enforced for neglecting them. The attendants must also be selected with care, and all rejected that show any tendency to morbid conditions of the respiratory organs. They found that 1296 of the total of 4470 attendants connected with the hospitals of Paris were already diseased, 651 with bronchial affections and 526 with pulmonary tuberculosis. There have been 599 deaths among them during the past ten years, 217 due to tuberculosis and 154 to other diseases of the respiratory organs.

Prevention of Infectious Diseases.

Dr. J. M. G. Carter, of Waukegan, Ill., thus concludes a paper in the *Journal of the American Medical Association :*

(1) Systematic cleanliness should be practised, (*a*) by thorough disinfection of the patient, the sick-room, all instruments, vessels, and other apparatus or clothing in use ; (*b*) by allowing no unclean or infected fabric or vessel to be taken from the room until rendered aseptic.

(2) Prevent individual contact (*a*) by isolation, segregation, or quarantine ; (*b*) by prohibiting communication between the infected and uninfected, except under strict surveillance of the physician or in accordance with his explicit directions.

(3) Provide thorough and systematic ventilation of cellars and basements as well as all other rooms in houses used for dwellings, and give free access of air under floors of houses which have no cellars or basements, and supply complete drainage.

(4) Fortify the system against pathogenic bacteria (*a*) by abundant and suitable nourishment ; (*b*) by insisting upon the observance of the laws of hygiene relating to clothing, eating, exercise, and bathing ; (*c*) by the administration of certain drugs, among which belladonna, iron, and pilocarpine are prominent ; (*d*) by the conservative use of vaccination, inoculation, the serums or antitoxins and perhaps protonuclein.

(5) The State or city should see that the poor have work, food, clothing, good shelter, public baths, and fresh air.

(6) Health inspection officers should keep their wards in good sanitary condition, and see that the water and food-supplies are uncontaminated.

Did the Romans Smoke?

Colt's-foot, or the leaves of the lettuce, being slightly narcotic, would form a harmless make-believe for the good folk who persuade themselves that they could not sleep a wink were they deprived of their evening comfort. Ages ago both Greeks and

Romans, according to Dioscorides and Pliny, found comfort in smoking through a reed or pipe the dried leaves of colt's-foot, which relieved them of old coughs and difficult breathing. We can picture the legionary in Britain's bleak atmosphere, while pacing the Roman wall, trying to console himself in his lonely vigil with the vapor from his "elphin pipe," fragments of which have been found among the ruins of those early memorials to the Scots' persistent determination to travel southward.

And as to the lettuce, it has been famous since the time of Galen (Claudius Galenus), who asserts that he found relief from sleeplessness by taking it at night. Regardless of these things, the nicotian epicure of to-day enjoys the inestimable advantage of luxuriating in the delicate aroma of the Cuban leaf, while fancying himself wafted on his upward way to Nirvana. The charming simplicity that leads to his ideal conception of existence is most refreshing; the being so lost to the outer world can hardly be blamed if he says rude things when compelled to touch mother earth.—*Gentleman's Magazine.*

Gymnastics in Heart-Disease.

The Boston *Medical and Surgical Journal* contains an elaborate report of the discussion, before the Society for Medical Improvement, of the above subject. Some interesting observations by Dr. Folsom were the following:

"When I was in Munich, in 1879, I had considerable talk with Ziemssen about the treatment of organic heart-disease by muscular exercise, to which Oertel had called the attention of the profession several years before Ziemssen was using it pretty generally in his practice, and I asked him to see an American gentleman who had seen a number of specialists in this country and in London, and had been advised not to take vigorous exercise. Ziemssen immediately put him to Oertel's treatment, and that very afternoon this gentleman walked a number of miles over the hills in the vicinity of Munich. He has kept up that treatment, more or less, under suitable guidance. He now walks, rows, walks over hills, rides horseback, and has absolutely no symptoms so far as his heart is concerned. The valvular murmur is pronounced and the heart is larger than it was then. The compensation is perfect, and it seemed to me an extremely good result. It was not one of the cases, to which allusion has been made, of beef-eating, beer-drinking Englishmen. He was very temperate in all respects, and did not materially change his course of life. Five or six years ago a highly accomplished Swedish medical gymnast came to this country. She had a large practice after graduation, and was so proficient in her work that she has been the assistant of the professor in charge in Stockholm. She came into the wards in my service at the City Hospital and did some work to show me what she could do. Since then I have used gymnastic exercise very largely in my practice. . . . There were three things with regard to the Swedish medical gymnastics which struck me: In the first place, the very complicated system; secondly, their apparent simplicity; and, thirdly, their great power for good or for evil, according to the judgment and skill of the operator. I think in the whole system which Ling introduced there are something like one thousand different movements. I was also struck with the extreme simplicity of them. One would hardly think their physiologic effect would amount to much. As regards the very great power of these movements, the movements to correct slight scoliosis may defer menstruation one, two, three, or four weeks. On the other hand, in the absence of menstruation it can be brought on with great rapidity. It is the most efficient means of correcting metrorrhagia without organic trouble that I have seen. I have had a number of cases of organic disease of the heart treated in this way. I have four at present. One is a lady who five years ago had valvular disease of the heart, dilated heart, weak, irregular, intermittent pulse, and had had complete hemiplegia of one side, including the face. She has continued that treatment more or less all this time, and it has constituted one of the chief means of treatment. The pulse is regular, a little above seventy. She considers herself in perfect health. Another is a lady with a marked arterio-sclerosis and dilated heart. She has been under my care about two years, and that has been the chief method of treatment. The benefit in that case has been striking. . . . My belief is that the best way of using physical exercise, if the person is able to do it, is some out-of-door, regular general exercise. Of course a very large number of patients cannot do that, and the medical gymnastics which would be required in valvular disease of the heart where there is compensation or hypertrophy would be entirely different from the movements which would be required in a dilated heart where the walls are weak, and especially where there is arterio-sclerosis. It seems to me that while there are people in this community who are sufficiently accomplished and can be trusted in these cases, and who have demonstrated the very great value of this treatment, there is also a large number who call themselves Swedish medical gymnastics who have certificates or diplomas of varying value, and whose knowledge is so imperfect that they are dangerous persons to set to work on any important or difficult case."

Learn to Listen Intelligently.

"Learn, after you have learned to speak, to listen, and to listen intelligently," writes Ruth Ashmore on "How to Be a Social Success," in *Ladies' Home Journal.* "Express your interest through your eyes, and when it is needed say the encouraging word that, like hot water on the tea, brings out the strength. If a speaker mentions a wrong date, do not correct her. The world cares for the interesting talk, not for whether the affair described happened on Thursday or Friday, nor whether the *bon mot* was born at 9 or 1 o'clock. The effect on the speaker is belittling, and you have no right to underrate any one. Chatter about anything you will but personalities. But do not feel that you must raise the tone of society by ringing in, when everybody is laughing at some funny little story about a child or all are smiling at an amusing description of how the orange blossoms grow down South, your opinion of some heavy history that has lately been published. Society is not a school; it is a pleasure ground."

Dyspepsia Proof.

Much is said about American dyspepsia, but there is one native race of America that is certainly not greatly troubled by the modern curse. The sturdy little Esquimaux defy all the laws of hygiene and thrive. The Esquimau, like the ordinary dweller in America, eats until he is satisfied, but there is this difference, that he never is satisfied while a shred of the feast remains unconsumed. His capacity is limited by the supply, and by that only.

He cannot make any mistake about the manner of cooking his food, for as a rule he does not cook it, nor so far as the blubber or fat of the arctic animal is concerned, about his method of eating it, for he simply does not eat it; he cuts it into long strips an inch wide and an inch thick, and then lowers the strips down his throat as one might lower a rope into a well.

After all that he does not suffer from indigestion. He can make a good meal off the flesh and skin of the walrus, provision so hard and gritty that in cutting up the animal the knife must be continually sharpened.

The teeth of a little Esquimau child will meet in a bit of walrus skin as the teeth of an American child would meet in the flesh of an apple. And that when the hide of the walrus is from one-half to one and a half inches in thickness, and bears considerable resemblance to the skin of the elephant, the Esquimau child will bite it and digest it, too, and never know what dyspepsia means.—*Popular Science News.*

Photographing Thought.

It may be rash to pronounce that anything is beyond the photographer's art. But the communication just made to the Paris Académie de Médecine, by Dr. Baraduc, is so astonishing that if he had made it before Dr. Röntgen had rendered his discovery public, very few people would have been inclined even to inquire into the matter. Briefly, Dr. Baraduc affirms he has succeeded in photographing thought, and he has shown enormous photographs in proof of his assertion.

His usual method of proceeding is simple enough. The person whose thought is to be photographed enters a dark room, places his hands on a photographic plate, and thinks intently of the object, the image of which he wishes to see produced. It is stated by those who have examined Dr. Baraduc's photographs that the most of them are very cloudy, but that a few are comparatively distinct, representing the features of persons and the outlines of things. Dr. Baraduc goes further, and declares that it is possible to photograph at a great distance.

In his communication to the Académie de Médecine he relates that Dr. Istrate, when he was going to Campana, declared he would appear on a photographic plate of his friend, M. Hasden, at Bucharest. On the 4th of August, 1893, M. Hasden, at Bucharest, went to bed with a photographic plate at his feet and another at his head. Dr. Istrate went to sleep at Campana, at a distance of about 300 kilometres from Bucharest, but before closing his eyes he willed with all his might that his image should appear on the photographic plate of his friend.

According to Dr. Baraduc that marvel was accomplished. Journalists who have examined the photograph in question state that it consists in a kind of luminous spot on the photographic plate, in the midst of which can be traced the profile of a man.—*London Standard.*

The Paternal Benediction.

A custom, carefully preserved in certain parts of the north of France, is that of the paternal benediction. This is not the benediction at the hour of death, which we find in so many countries, but the daily benediction bestowed upon their children by the father or the mother of a family. Does it exist in many of our families? We know not, but we do know of some few examples altogether touching. A distinguished lawyer carries out the custom as he saw it practised in his childhood's home. Not only does he bless his own little ones each evening when they take leave of him for the night of sleep, but he never returns to his father's house without bending reverently before the aged man to receive his blessing as in former days. One day he entered the dining-room rather late and after other invited guests were already seated at table. He none the less reverently approached his father, and the touching scene of the family benediction took place in the presence of the edified witnesses.

What have we gained in place of this most Christian habit? The hand-shake of comrades between father and son, the careless "good-night" kiss, do they serve for it? How soon would the respect that is a parent's due be re-established among us if the parent's heart were animated with that lively faith that blesses a beloved child, not in the hour of danger alone, but each and every day before the hours of slumber after reciting the evening prayers together!—*Semaine de Religieuse de Montreal.*

A New Danger.

The craze for tall buildings that has recently shown itself in such a marked fashion in some of our large cities brings with it a new menace to health. The ventilating pipes of buildings of ordinary height discharge their contents into the air just in front of windows of these sky-scrapers. A number of cases of fever have been traced directly to this cause. In view of this fact, it will be necessary to connect these escape-pipes with other pipes that reach the top of the taller buildings in their vicinity. Under the circumstances the height of the building is a serious menace to health, and those who go up many feet above the street for the sake of getting good air to breathe are in great danger of finding worse ills than the atmosphere of the common level.

The Disposal of Domestic Slop-Water in Isolated Houses.

In a paper before the British Medical Association, Dr. G. V. Poore said the slop-water of an isolated house must ultimately take the same course as the rain falling on the land upon which the house is built,—that is, the line of natural drainage. Household slops consisted of bath-water, which was often almost clean; bedroom slops, composed of a mixture of soapy water and urine, and the waste of the kitchen- and pantry-sinks, which was apt to contain solid food, particles, and fat, and was very prone to become excessively foul. The flow from the kitchen- and pantry-sinks, according to Notter and Firth, would average about four gallons per head *per diem*, and bedroom slops about five gallons per head *per diem*.

The points insisted upon were:

(1) All waste-pipes should be well above ground level.

(2) All slop-water should be run in open gutters, with perforated floors and good bottom-drainage, so that the water might soak away as it runs. Such gutters might with advantage be placed on low banks with sloping sides, and quick-growing shrubs, such as privet, should be planted along-side of them. These sucked up the moisture.

(3) No stagnation must be permitted anywhere along a line of drainage, and, with the waste-pipes terminating in the open, no traps were necessary or advisable.

(4) Slop-water should never be taken in pipes below the surface of the ground. Subsoil irrigation was a mistake.

(5) The waste of the kitchen-sink must be strained through a sink-basket and pass through a filter of rough stones before being allowed to flow to a gutter.

THE
ANNALS OF HYGIENE
PHILADELPHIA
VOL. XII NO. 2

COMMUNICATIONS.

The Prevention of Diphtheria based on a Study of the Klebs-Löffler Bacillus.

BY EDWIN LE FEVRE, M.D.,
Sidney, Ohio.

THE writer, while not a veteran in sanitary work, can well remember when practically no precautions were taken to prevent the spread of diphtheria. A child taken sick with the disease would be visited by all its friends and playmates, and if it died the school would be dismissed to attend the funeral. As a result whole neighborhoods were frequently infected and many families were stricken and decimated. But the light has been breaking in dark places, and nowhere more than in the management and control of communicable diseases. With the passing of the old inflammatory theory and the advent of the germ theory came the knowledge that certain diseases were not only communicable but preventable. Diphtheria is one of them. While it cannot be classed among the highly contagious diseases, there can be no doubt but that it is communicable under favorable conditions. Being a very dangerous disease and one attended with serious complications and sequelæ, every effort possible should be made to prevent its spread. Our efforts in this direction must be based on a study of the etiological factor,—the bacillus diphtheriæ, commonly called after its discoverers, the Klebs-Löffler bacillus. Before proceeding to the discussion of preventive measures proper, we wish to say a few words about this germ. The bacillus diphtheriæ was discovered by Löffler in 1883. Klebs had seen it the year before, but Löffler was the first to isolate the germ and experiment upon the lower animals. In size it is usually about as long and twice as thick as the bacillus of tuberculosis. Its chief morphological characteristics are its irregular shape and size,—very frequently larger at both ends than in the centre (dumb-belled), but often largest in the centre or at one end (knobbed). Sometimes it is quite long but often short. It may also be differentiated by its irregular grouping and the uneven manner in which it takes a stain. It is, in fact, known more by its irregularities than by any definite size, shape, or grouping. While it thrives best on blood serum at body heat, it will live and remain virulent for months, probably years, under most unfavorable conditions. It is found in all cases of true diphtheria, and when injected in pure culture into susceptible animals produces symptoms similar to those found in the human subject, thus completing the chain of proof that it is the cause, and only cause, of diphtheria. Micrococci (strepto- and staphylococci) are usually found in the throat of a diphtheritic patient, and were, for a time, thought by some investigators to be the specific cause of the disease. These germs are now known to give us the mixed infection which we have in so many cases of diphtheria as well as other infectious diseases, and help to explain why some cases, where the membranous exudation is extensive, get well while others with less local manifestation succumb to the disease. The broncho-pneumonia which is a frequent complication of diphtheria is doubtless due to the inspiration of these cocci which may themselves produce a pseudo-membrane.

The bacillus diphtheria, having gained a lodgement in the throat and finding there the proper soil, multiplies and produces a false membrane or exudate. This is usually located in the pharynx, but may extend into the larynx or nasal cavities. This is the primary or local lesion. A toxine or toxalbumen is produced, which enters the blood and is responsible for the constitutional disturbance. This is the modern and rational pathology of diphtheria, in contradistinction to the theory formerly held that it is first constitutional and that the local lesions are secondary.

And now for the practical part of our subject, which is the prevention of the disease. As soon as a patient is suspected of having diphtheria he should be placed in a room, preferably upstairs, and as far removed from the living apartments of the family as possible. The room selected should be capable of good ventilation, and be specially prepared by removing all unnecessary furniture and drapery. From this room every one should be excluded except the nurse or attendant and the physician. The infection of other parts of the house might be still further prevented by hanging sheets saturated with some disinfectant solution over the doors of the sick-room. Could a patient be thus carefully and faithfully isolated in one room there would be little need of quarantining other members of the household. Unfortunately in too many instances this cannot be depended on, and it is often, especially among the poorer classes, not feasible or possible, and a quarantine of all the inmates of the house is the only recourse. There is good reason for saying that the specific germs of diphtheria are not widely disseminated from the point of origin unless carried by some intermediate object or person on whom they may find lodgement; by this latter method they are often widely spread. Investigations have shown that persons who come in close contact or association with diphtheritic patients as nurses or physicians very frequently have the germs in their throats, and, although they do not themselves in every instance take the disease, may be the means of conveying it to others.

The greatest care should be taken to burn or thoroughly disinfect all expectorations from a patient having diphtheria. As in consumption, he should be provided with spit-cups or cloths, which can be burned soon after use. Fire is the best disinfectant known, and should be the one selected whenever possible. All dishes used by the patient should be boiled soon after use, and all remnants of food burned. After the recovery or death of the patient the apartment should be subjected to a thorough disinfection. Sulphur fumigation may be practised, but to be of any avail must be done carefully and in accord with our present knowledge of bacteriology. No one should be lulled into a false sense of security by burning a little sulphur on a stove.

Disease-germs are not so easily exterminated. Not less than four pounds of roll sulphur should be burned for every ten feet square of room space, the apartments being closed up tightly so that the fumes cannot escape, and the fumigation should continue for several hours. Bedclothing and body-linen should be boiled, and wood-work windows and furniture may be washed with a bichloride solution (one drachm to the gallon of water).

Recent experiments have shown the vapor of formalin (a concentrated solution of formic aldehyde, CH_2O) to be a very efficient germicide. Books and other articles can be readily disinfected by exposure to this vapor. We believe the day is not far distant when this agent will largely displace other germicides now used.

Physicians and sanitarians are often asked the question, What can I do to prevent my children from taking diphtheria? We would answer this question by saying, in the first place, see, if possible, that they are not exposed to contagion, and, in the second place, see to it that their throats and upper air-passages are in a healthy condition. In diphtheria, as in other diseases we might name, we must have the fertile soil as well as the seed; and we have the best medical authority for saying that a child with a healthy throat is not liable to take the disease even though exposed. Every outbreak of diphtheria will show that the child with a bad throat, the so-called croupy child, is usually the first to take the disease. Inflamed, catarrhal, and hypertrophied conditions of the throat and nose furnish a suitable nidus for the lodgement and development of the germs, and hence, if we can maintain a healthy mucous membrane, we have gone a long way towards preventing infection. Much can be done in this direction by the daily use of a spray of some alkaline antiseptic solution. For this purpose we know of nothing better than a solution made from the antiseptic tablets (formula of Dr. Carl Seiler); this solution properly sprayed into the throat and nose (preferably warm) is not only unfavorable to the growth of germs, but prevents or removes that catarrhal condition that so often prevails among children especially in the winter season. Hypertrophied and glandular troubles of the throat and nose should receive attention at the hands of a physician.

In conclusion, we would insist on the importance of boards of health and health departments in all large towns and cities having some one under their direction who is prepared to make a bacteriological diagnosis of diphtheria. This can now be readily done by the use of culture-tubes placed in the hands of physicians and an accurate diagnosis arrived at in a few hours. This is very important to the end that all doubtful, suspicious, and isolated cases could be known and properly quarantined and the public protected from infection. An experience of several years in this line of work would lead us to believe that many cases of diphtheria exist that are not known or suspected. Mild cases run at large, spreading the disease broadcast. How often in trying to trace the origin of a case of diphtheria have we been told that the patient had visited or associated with some one who had a mild sore throat to which at the time no attention was paid. All sore throats, especially in children, should be regarded with suspicion, and an effort made at once to determine their exact nature. In many cases this can only be done by the aid of the culture-tube and microscope.

Sewage-Disposal.

BY J. A. MACK, M.D.,
Madison, Wis.

SEWAGE-DISPOSAL is an important subject from the fact that water-supply is liable to be polluted, and, of necessity, some steps must be taken to remedy the difficulty. Sewage-disposal is in one sense new; it is only during the last fifty years that nations have found the necessity for preventing water-supply pollution. The methods adopted are various, and any community adopting a sewage-disposal system will find that it is more or less of an experiment. There is no ideal form for the disposal of sewage. The methods that are now in use all have certain drawbacks. The pouring of our sewage, of whatever kind, into flowing streams, ponds, or inland lakes, from which a water-supply is liable to be taken, should be prohibited by law, and be strenuously enforced. It has been found in England that nearly all rivers which were used for water-supply were so fearfully polluted that a large death-rate resulted, and the old axiom, that a given volume of sewage poured into twenty times its bulk of water after a flow of a dozen miles would be lost, is wrong; a flow of 120 miles would not dissipate the sewage. It is true, it may not be discovered either chemically or microscopically, yet it is impossible to say just what tumblerful of water will contain the nidus for an epidemic. Consequently too much care cannot be exercised.

By sewage disposal is not meant the indiscriminate pouring of our filth into any near-by body of water. To get rid of it ourselves, we have no right to foist it upon others. The object of sewage-disposal is the purification of an immense volume of water containing many substances in suspension and solution. Now we will have to differentiate and make a vast distinction between the engineering problem and the disposal of sewage. The engineering problem is the conduction of the sewage and its delivery where wanted. After its delivery, then comes the problem of its care. Now there are several methods whereby sewage can be well cared for. Some are expensive and constantly so; others are, in a measure, more economical. We can virtually divide the purification of sewage into two methods,—the land system and the chemical system,—because they are mostly in use. Great care must be exercised in the laying of all sewers that you have water-tight joints, for two reasons: (1) If there is a leakage, the sewage may pollute the soil; (2) if the soil be wet, ground water will find entrance to the pipes and double or treble the normal amount of sewage.

The land system of sewage-disposal is coming into more general use for the reason that when disposed of it is effectually disposed of, whereas, by chemical means there is no end to the disposal of sewage until all the deleterious matters have been cared for. Furthermore, chemical precipitation does not purify sewage. It removes from about 40 to 60 per cent. of the organic matter, and little of the bacterial life. It is a very troublesome thing to look after the waste product of a chemical plant, for the reason that it contains a large volume of water and a very small amount of solids. The average amount of solids to a ton of water would be about five pounds. The solid matter of "sludge," as this precipitated matter is called, either has to be mixed with other substances and absorb the water, compressed, buried, burned, or distributed on farms; at any rate, the cost of chemical precipitation is in direct ratio to the amount of sewage treated, whereas, in the land method the first cost is the greatest expense, unless you think of deriving a profit from the use of the sewage, which has been done and is being done in sewage farming.

Now sewage farming is nothing more than the irrigation of land for the raising of crops. There are various forms of crops that can be raised, yet on the whole the only crop that requires little care is grass. Unfortunately, grass crops raised on sewage farms will not make good hay in all seasons, and inasmuch as communities are not in favor of starting dairies or erecting silos, it is questionable how far we can go with sewage farming. In addition, the sewage farm requires great preparation. The sewage cannot be flooded onto it at all times; in wet weather you can use but little, and in the dry seasons, while the crops are growing, sewage must be distributed very carefully so as not to injure the growing vegetation. There has been a great deal of outcry against the products of a sewage farm, but they are totally and perfectly innocuous; they are just as free from taint and just as wholesome as any product ever raised. The trouble with a sewage farm is that it requires a large amount of land. You can figure one acre to every hundred inhabitants. During the season, while the crops are growing, it requires at least one man to every four acres of ground, and under our present political system, sometimes in pretty fair-sized communities they may be the balance of power, which is not always desirable.

The other form of sewage-disposal, the filtration of sewage, is intended for the purpose of purifying the water and for raising no crops. It has been demonstrated by experiment that earth of certain kinds will purify sewage and do it effectually. It has been, furthermore, demonstrated that sand is the best purifier; but sand of certain size is better than the larger or smaller sizes. An area of sand large enough in dimensions, properly divided, so that each day or each week a certain portion will receive a certain amount of sewage, will purify the sewage and do it effectually, removing 90 per cent. of the deleterious matters, including the bacteria.

There are other forms of sewage-disposal, and two that have lately been experimented with, one of which is the forced aeration of sewage. The intention is to have filter tanks of not large size, and, by continually forcing air through these tanks, aerate and thus purify the sewage. The other is an electrolytic method. The subject of sewage-disposal, to be handled properly in all its bearings so as to be well understood, would require hours of talk, while my few remarks are simply desultory.

A Portable Lunch.

Raisins, dates, and chocolate tablets are all good sustainers for a day's tramp or a day's run on wheels. A country physician who finds himself obliged often to be oblivious to meal-times says that he finds the compressed chocolate cake, easily carried and easily nibbled, has food salvation over and over again in the course of a year.

The Proper Source of Water-Supply and the Domestic Well.

BY R. M. WIGGINTON, M.D.,

Waukesha, Wis.

THIS question is one of the highest importance. About 80 per cent. of our system consists of water. This is furnished largely from the water we drink. The inestimable value of pure water cannot be doubted. Impure water always produces, or tends to produce, disease. Every drop of water we drink passes through the system, nourishing, laving, and intimately associating with every cell and tissue of the body. Pure water should rank in importance with pure food.

Probably it would not be putting the question too strongly to say that the health, happiness, and welfare of the household depend more upon the character of the water consumed than upon all other factors in domestic economy. This matter has not received the attention which rightfully belongs to it. Every physician in the land can testify to the doubtful character of the domestic well. It has become the settled practice of physicians now to advise their patients to drink only boiled water. This has been brought about solely because of the unhealthy character of the water of the common well.

Unfortunately, the location of the wells of the country has not been conducted on scientific principles. Convenience has almost always been the first consideration.

How often we find the house on a slight elevation, the outhouses, privies, and barn-yards on the same level, or higher, and the well, for convenience in digging, under the hill, ready to receive the wash from the barn-yard, percolations from the privy, and the drainage from every source of filth that so rapidly accumulates around all farm premises.

What should be the proper source of the domestic water-supply? With this question, like many others, circumstances alter cases. Where it can be had, the artesian well is the most economical, safest, and best of all. However, the trend, geologic formations, and altitude will not always favor this form of well. The next best is the so-called drilled well. The drill should be sunk from 100 to 150 feet deep. At this depth there could hardly be contamination. However, at a less depth, provided the drill pass through a thick stratum of clay, there need be little fear of danger. The above are probably the two safest sources of supply.

One of the common sources of water-supply for domestic uses is the ever-sparkling and deceptive spring. This source of supply is rapidly becoming more dangerous, year by year, as the land is being denuded of its forests. Numerous tests of these springs have amply verified the above statement. I always drink the unprotected spring-water with distrust.

The next, and probably the most important source of water-supply for domestic uses, is the so-called dug well. This source of supply is, without doubt, the most dangerous of all. The well once dug goes on forever.

The first thing done by the early settler was to dig a well. This was usually done where the water could be obtained the easiest, or with the least labor. The lower ground, or some spring-hold, was usually sought. The matter was reversed, by building the house to accommodate the well. This fact can be observed all over every county in the State. At first this source of supply, in many instances, was very dangerous. No doubt much of the sickness during the early settlement of our country can be attributed to this cause alone. As the country grows older, the soil polluted, and the "wash" unobstructed, this source of danger becomes still greater. The same may be said in regard to the spring, which is still retained as a source of water-supply by large numbers of the rural population throughout the State. No spring, no matter how limpid and apparently free from contamination, should be considered pure unless protected at the surface. There are so many ways of contamination from the surface, by hill and valley wash and drainage, that, unless the spring issues from the rock direct, the water cannot be considered pure.

Even if the water, before coming to the surface, passes through a considerable distance of gravel, as it often does, the spring cannot be considered pure if subject to surface drainage. Water always forces its way through the earth where it meets the least resistance, subject to attraction of gravitation. Water always seeks its level, as instanced in the spring and the artesian well. Water never rises above its level except by a force behind, or by capillary attraction, or both combined. It is thought that water may pass to a higher level than its source in the earth, by a system of siphonage, under certain conditions.

And now in regard to the proper location of the common well. The "trend" or inclination of the land should be carefully studied, not only of the surface, but also of the lower strata, the clay, gravel, sand, and rock. Keeping in view the trend of the soil, the well should be located above, and privies, barn-yards, etc., below. If possible, the well should terminate in gravel *below* a thick stratum of clay. It should go below all "first currents," which are not lasting and are apt to be impure. Never take the first current *above* the clay stratum.

The curbing should be of solid stone, laid perfectly tight in cement from bottom to top, and tamped well in behind. The top of the wall should be carried well above the surface, and a lot of clay carefully tamped in above, taking the place of the surface soil, and gently sloping in all directions. This will effectually carry off all the direct snow and rain and surface water. The top of the wall should be perfectly true and gently sloping.

The plank should be matched and laid tight in cement, bolted in timbers anchored in the top of the wall. This will effectually keep out mice, toads, snakes, etc., which so often make this their place of habitation.

A ladder made of galvanized iron pipe should be safely anchored in the wall from bottom to top. There should be a tight trap at the top just large enough to admit a man. The well should be examined frequently. Use all the water the well will afford. If possible, pump it dry once in a while. Have the water examined occasionally for organic matter.

Meat Allowance to Soldiers.

A Japanese soldier is allowed seven ounces of meat in his rations, an Austrain or Spanish private eight, a French, Turkish, German, or Belgian, nine; an Italian eleven, an Englishman twelve, a Russian sixteen. The ration in the United States army is twenty ounces. The ration of bread is highest in the Austrian army, thirty-two ounces, and lowest in the English, sixteen ounces. In the German army it is twenty-eight ounces, in the French and Italian it is twenty-two, the same in the United States, and in the Russian army seventeen ounces. All modern armies, save Russia, have also a daily allowance of rice.

Prevention of Disease.

BY M. L. GEISER, M.D.,
Fort Madison, Iowa.

THERE is no section in the science of medicine that offers a wider field for honest endeavor, with more abundant and pleasing returns, than that of preventive medicine.

The thought and skill of the last three decades have spent their time and energy chiefly in this direction. The present finds even more and better work being done in this department. Not only physicians eminent in the profession, but every man and woman who studies and practises medicine from the stand-point of science and humanitarianism is striving if happily some additional truth may be laid on the side of prevention. To cure the sick and alleviate the suffering is a noble and a happy vocation ; but what can compare with the ability to forestall disease, to bar every means of entrance. The physician who is successful in this to any degree, however small, must feel a keen satisfaction and a just pride that will spur him on to deeper study and broader thought, with results more satisfactory and more enduring.

Success in prevention is largely dependent upon the laity, the greater portion of which is loth to take an active part ; and, not infrequently, we notice an aversion to the subject of hygiene when it impels acts of self-denial and the eradication of unwholesome habits. There are those, the minority of the laity, who do gladly and energetically co-operate with physicians, and they are rewarded in proportion to their diligence. Be it said for our encouragement, this class is steadily growing.

Opportunities are daily afforded for the exercise of discretion whereby we may have a most salutary influence upon our health. During the summer months every precaution should be used to guard against the disorders of the digestive system to which infants, young children, and the aged are especially liable. The first requisite in the prevention of intestinal disorders is proper aliment.

Any of the cereals make a substantial and reliable food for all seasons. Vegetables and fruits should be freshly cooked. No stale food should ever be taken into the stomach. Delicate children should not be allowed to eat bananas and other raw fruits which are exposed to infection while upon the market. It is a good rule to follow with frail children and adults that all food, including fruits and beverages, be freshly boiled, after which it may be cooled on ice. The food, after having been boiled, must be kept closely covered.

Food should be taken in moderate amounts and at regular periods.

Persons predisposed to digestive ailments should avoid fatigue and overheating.

It is most excellent practice, during epidemics of infectious diseases, to have all aliment thoroughly sterilized.

The evil effect of mouth-breathing during epidemics is often overlooked. It has been conclusively proven that the nasal secretion is germicidal. Few germs are able to gain entrance through the nose, while they pass through the mouth unhindered. Mouth-breathing plays a very important part in common colds, the cold air harshly striking the respiratory tract. By passing through the nose the air is warmed, moistened, sifted of any dirt it may contain, and disinfected.

There is no better way of anticipating common colds than by the cool morning bath and brisk rubbing. Allow me here to emphasize the importance of the morning bath. Its value cannot be over-estimated, and there is no age nor condition to which it is not applicable. The temperature of the bath may vary from 80° to 65° F., the average being about 70° F. During winter the temperature of the water should not be lower than that of the room. The bath must be followed by a brisk rubbing, after which the skin will feel aglow.

If there is one disease more than another which we may forestall by rational living it is neurasthenia,—nervous debility. There is an idea prevalent that this affection is a direct effect of our progressive age. Nothing could be more erroneous. The American is energetic, pushing, restless, impatient, and may live under a greater or less strain ; and he may have a nervous manner, but this is superficial,—is not nervousness in the sense of a nervous disease.

Nervous debility is caused not by work but by worry, by countless little indiscretions in our daily living, which aggregate and finally undermine the health. The cardinal principles for rational living may be briefly stated as follows: First, the body must be well cared for; and, second, the mind. The body should be frequently bathed and clothed in light, comfortable apparel. Food well cooked, thoroughly masticated, and meals regular. Plenty of wholesome sleep. Wholesome sleep is impossible except in a cool, well-ventilated room. The old rule of eight hours' sleep still holds good, and those who are old-fashioned enough to take their sleep between the hours of 9 P.M. and 5 A.M. are entirely compensated for the sacrifice of many evening pleasures by arising each morning refreshed and well. Daily out-door exercise is indispensable.

It requires patience and determination to constantly maintain mental equipoise. Every thought and act must be attended by calmness on deliberation. Submission to destiny must be our motto. If we at all times live within our means and make an honest effort to not worry, we thus invite contentment, which, we are told, is better than riches.

By following these rules of living, we may feel assured of a happy and a healthful longevity.

Hygiene of Childhood: Clothing.

BY J. A. RENE, M.D.,

Superior, Wis.

GARMENTS of civilized life are usually made from the following materials: silk and wool from the animal kingdom, and cotton and linen from the vegetable kingdom.

Linen and cotton have smooth fine texture, and garments made from them are non-absorbent and rapidly conduct the heat away. They also take up the perspiration and easily become wet; for these reasons they are the wrong materials for undergarments. Silk and wool are the best materials for general clothing. Under the microscope their fibres are seen to be rounded and of a more compact nature. Wool is a very bad conductor of heat and a very good absorbent of water and moisture, hence its superiority for underclothing. Especially in this part of the country where changes of temperature are sudden, wool is certainly superior to any other material. Being a non-conductor, it prevents the dissipation of the heat from the body. Silk is also a bad conductor, but is less absorbent than wool, and while it is better than cotton it is inferior to wool for under-clothing.

The importance of proper clothing in children begins when the child has first made its appearance from its uterine home into this cold world of miseries. The usual and traditional way of nurses to put the stump of the umbilical cord through a small hole burnt in a piece of linen is still practised, but I think it a better way to use a piece of antiseptic absorbent cotton around the stump which is directed upward, then a flannel binder quite wide is applied in such a way that there can be no danger that it might interfere with the respiratory acts; in fact, nothing should be tight around the neck, the chest, or abdomen of the child. The undershirt, skirt, and dress should loosely fit in such a way that the child can move its upper and lower extremities with perfect freedom. It is of the greatest importance that everything about the child should be clean and dry. Most mothers keep their children too warm; they are afraid they will catch cold, and therefore pile up stuffs on top of the poor little one to that extent that the child is so heavily weighted that it cannot move, and it soon feels so warm and cramped up that it will cry; then the mother will take the little one from its Turkish bath onto her knee, whereby a sudden change of temperature from 10° to 15° is experienced by the child, and the result may be some throat- or lung-disease. When the doctor is called in he is told how warm the child has always been kept, it is true,—too warm. Mothers should be told and nurse should keep in mind that there is more danger in overdressing a child than in not dressing it enough. It is true that children inured from the beginning of their life develop more rapidly and are stronger than those who have been excessively covered. The puny, weak, sallow-looking baby is often the product of overdressing. How well this is illustrated when you see the children of some poor family running around with rosy cheeks and bright eyes, perfect pictures of health, while on the other side you see the child of the rich, with pale face and lifeless eyes, while its body is wrapped up in many costly garments. Of course, children should be well covered, because they lose heat rapidly and are liable to chill easily; their circulation being rapid, more blood is carried in a given time to the superficial vessels and more heat is thus lost from the surface than in adults, and this is one of the reasons why woollen clothing is best for children.

At night a light undershirt of soft flannel should be worn by children, besides their night-gowns. In winter a child's night-dress should be long enough so that it can be pinned together at the bottom, or a better way is to have a drawing-string at the bottom so that the child cannot kick its legs bare during the night.

The undershirt worn during the day should never be worn during the night. Stockings should never be allowed to remain on the child's feet during the night nor anything on its head, such as night-bonnets or night-caps. It is all right for a man to go to bed with a "night-cap."

All clothing should be changed often and should be perfectly dried and warm when put on. Shoes should be of very soft leather and always large enough to allow the feet to grow properly. Rubber goods should be worn only when children are out in the rain and should be removed as soon as they are inside. When they go to school, they should be told to surely remove their overshoes during school hours, even at the risk of having them stolen.

When children are to be taken out during cold weather their outer garments should not be put on until they are ready to go, and should be removed as soon as they are inside again.

When mothers will understand the laws of hygiene in clothing, homes will not so often be saddened by the sudden throat or lung trouble of their children. Health with its many blessings will exist more permanently in homes where these hygienic rules are followed.

A Safe Rule in Bicycling.

The only lesson to be learned from the several bicycle accidents that have occurred here in the last few days is that the rider who while on his wheel gives anybody credit for any intelligence whatever runs the risk of an accident every time he does it. The only safe rule is for the rider to regard all persons except himself, other riders especially included, as being absolutely incapable of taking care of themselves, and to look out for them accordingly.—*Savannah News.*

School Hygiene: the School-Room.

BY R. M. WIGGINTON, M.D.,

Waukesha, Wis.

A HEALTHY school-room presupposes a healthy school-house; we cannot have the one without the other.

In order to have an ideal school-house it will be necessary to consider many factors, chief of which is location. The ideal site cannot be found with equal facility in city and country. The location should be elevated, so as to secure good drainage. The grounds should slope in all directions. There should be a dry soil, with a gravel subsoil. If possible, the building should front the southeast. There should be sufficient shade, and the trees should be well trimmed up, allowing a free passage of air through the grounds.

If possible, the building and grounds should be protected by a forest from the north and west, or some other healthy protection, as higher hills or elevations. These protections should not be too near the site. All the surroundings should be healthful and pleasing to the eye. In regard to the building, it should be a work of common sense, up-to-date art. There should be ample distance between it and the street or road, thereby cutting off all extraneous or disagreeable sounds, which always interfere with close attention to studies. The interior of the building, generally, should be finished in soft, subdued tints, in dead colors, thereby giving no violent contrasts and no reflections. All school-rooms should be so built and planned that when the scholars are in their seats the light shall come from behind, and diagonally from behind over the shoulders. No slates or glazed writing material should be used, and no reflecting surfaces of any kind allowed in the room.

There should never be more than thirty scholars at one time in the room during study hours; and no one teacher should be allowed a larger number. A room seating this number should not contain much less than 700 square feet of floor surface; and it should be at least fifteen feet high. The light should be ample but subdued. All seats should be arranged singly, the backs not too sloping, and all sharp angles and corners nicely rounded off.

Great care should be exercised in grading the seats in accordance with the age and size of the pupil.

The properly-shaped room of a graded school would be about 21 x 32 feet, inside measurement. In the above-sized room the aisles should be two feet wide, and the side space five feet, giving ample room for working at black-board and maps. The upper end of the room should have a space of 8 x 32 feet for teacher, desk, and black-board exercises. Next to the school-room should be planned two ample narrow rooms or halls in which each sex can tidily hang its outer clothing. These little rooms should be well ventilated and properly lighted.

The heating of school-rooms is a problem not yet solved. So far the Ruttan system seems to have given the best satisfaction. With the exception of superheated air and a slight defect in ventilation, the system is a very good one. The ideal heating apparatus, however, would be the hot-water system. The heating should be indirect and the general principles of the Ruttan system carried out, with the addition of ventilation at the top of the rooms, to be used only during hot and muggy weather, or at any season of the year when the upper strata of air become overheated. The downward ventilation should always pass directly under the floors, giving additional warmth, and making the system more economical. The Ruttan closet system is about all that could be wished for.

Imperfect ventilation, superheated air, and the noxious emanations from filthy bodies and dirty clothing, produce more lassitude, headache, and sickness in the room than all other causes combined. The best temperature for a school-room would be about 68° F. A higher degree than this produces languor, and is enervating, rendering children more liable to "catch cold" on entering the play-grounds or elsewhere. In fact, any dwelling-house, where healthy people reside, should not be kept, for health, at a higher temperature than 66° F. One great fault with the American people is the very objectionable one of keeping their dwellings too warm. Imperfect ventilation and overheated rooms are two of the most prolific causes of that prevalent American disease, catarrh of the head, throat, and nasal passages.

All school-rooms should be carefully mopped and seats wiped with a disinfectant every evening after school hours ; and every Saturday the entire floor surface and banisters should be wiped up, and mopped with hot water containing a good disinfectant, during the entire session. No sweeping or so-called dusting should be allowed in a school-room. Money expended for these purposes will pay an hundred-fold. There should be a morning and afternoon intermission of the entire school, even if many do not go out into the open air. It gives a mental and bodily rest, and restores vigor and concentration of thought.

Small children should not be kept in the school-room more than four hours each day.

No child who has not reached the age of 6 years should be allowed to attend public school, and may not even then. The family physician should be consulted in this matter, and not allow so important a matter to rest solely on the judgment of the parents or guardian. In all graded or high schools a competent janitor should be employed. No scholar should be allowed to remain in the school-room unless perfectly tidy, clean, and wholesome. The teacher or principal should be given authority to correct this matter by sending the pupil home for renovation. This matter of filthiness on the part of pupils is often a great source of contamination of the atmosphere of the school-room, and a breeder of disease. All scholars with any suspicion of sore throat or cough should be immediately sent home for inspection by the family physician, and not readmitted without the proper certificate. Teachers should also be on the alert to discover any imperfection of eyesight. The simple fact of repeated headache should arouse suspicion. All scholars should be properly vaccinated. In convenient places spittoons, well filled with a fluid disinfectant, should be kept. A child should be taught never to defile the floor of his school-room with spittle. The school-room should be pure and undefiled. No known consumptive, pupil or teacher, should be allowed in the school-room, or any one having a discharge, sore, or eruption. Many scholars can stand more study and in-door work than others. This fact should be well considered by teachers and school boards.

The younger children should be given easier tasks and less hours of study. The very best men and women should be chosen to make up our school boards. The utmost care should be exercised in the selection of teachers, and a greater liberality shown by the public in their remuneration. Not every graduate of a high school is competent, or should be hired (which is too often done to the detriment of the school) to teach in her own district. The very best teachers should be hired, irrespective of political or friendly bias.

The hygiene of all schools, whether district, village, city, private, or parochial, should be under the direct charge of the several boards of health, and at the head of each board should be placed a competent physician, well versed in health matters. And last, if it will add to the health of the school, I would place on the highest pinnacle of this temple of learning the flag of our country.

Defeat of Baneful Inheritance by the Individual.[1]

BY EDGAR HOLDING, M.D.

SUPPOSE an individual finds himself possessed of this piece of mechanism we call a constitution, transmitted as the composite of contributions from his progenitors, and realizes that it is not like that of pine with oak, of carbon with iron, or of zinc with copper, giving a hardness belonging to neither alone. How is he to remedy and defeat his inheritance?

There seems to me to be three essentials: Early subjugation of the will, proper environment, and well-considered marriage.

Few children born of licentious and depraved parents whose natural tendency to evil has been unchecked, or whose passions have been fostered rather than curbed, pass the period even of puberty without an enfeeblement of vitality. This, however, is not, as would first appear, the fault of inheritance, but the result of their own willingness to do evil.

There are many of such degenerate lineage, however, that, as stated by Maudsley,[2] "their defective natures will not take the stamp of virtue." They are born with either absence or bluntness of moral sense. Yet in many, perhaps most of these, there lies dormant the spark of good which may be quenched or by right education developed into flame.

The exhibition of right motives, contact with men of noble purpose and women of unselfish and holy lives, has moulded many a distorted character, and led it out into bodily as well as mental and moral health.

---

[1] From the Medical Examiner.

[2] Body and Will.

It is, however, chiefly with the subjugation of the will by the voluntary act of the individual that we have now to do.

A young man whose parents were inebriates puts on his own chains when he allows his associations to be those of the saloon or street, or fails to curb the tendency which he well knows will be strengthened by every yielding.

The maddening craving for alcohol will never come to him who has resisted the desire to taste it and has never felt the first thrill that wine gives to the senitive brain, but there are those, and alas they are many, to whom one single glass taken innocently for exhaustion or disease has proven the torch to start a final conflagration.

A young man is insensibly educated towards or away from his special tendency by those with whom he puts himself in daily contact, and who are largely at the outset the outcome of his own voluntary choice.

This choice is usually the combined result of his home influence and his own defects. It is a lamentable fact that man likes to associate with those who are weak in the same direction as himself, and with foolish egotism likes to toy with and examine the evils which he knows are to him especially hazardous. If he chooses that which shows the consequences of evil, that fills his mind with high aspirations and noble purposes to the exclusion of evil, he chooses a potent factor in shaping his life. To deny this is to claim that to some men free will has been denied.

No sane man whose ancestors had developed insanity would take a position as wardmaster in a lunatic asylum.

No wise man with a history of parental inebriety would become a bartender, nor would a prudent man whose ancestors were asthmatic or gouty deliberately indulge in the excesses of wine and high living. Yet, unfortunately, such men are led along, educated by their associations to wilful yielding, or through their own voluntary indecisions find themselves defying the tendencies of which they are possessed.

Most men shrink at first from the brink of a precipice, but later pride themselves upon walking upon the outermost edge.

Subjugation of the will includes, of course, domination over the appetites as well as the passions, but among these, as influencing the endurance of physical vitality, perversion of the common appetite for food and drink is not the least.

Of the passions and their influence upon the period of puberty and adult life it is unnecessary to speak, as the subject is too familiar; but of the lust for excitement, whether of late hours and new shows, or of artificial foods and for stimulating excitants to a *blasé* stomach, the foundation may be laid in children by thoughtless parents, but is made lasting only by the individual.

In a considerable experience in family practice, I long ago noticed that the families most frequently requiring attendance were not those where actual disease prevailed, but where the children indulged in indigestible knick-knacks *ad libitum.*

This did not occur alone among the rich. To the comparatively poor, lobsters, cocoanut-pies, and ice-cream, not infrequently mixed, were luxuries that took the place of proper food.

As a result of all this folly, by no means of isolated infrequency, I have seen querulous, weakly adolescence, enfeebled manhood or womanhood, and the development of the family disease.

For the period of childhood the exercise of free will is impossible, but there comes a time before the damage is irretrievable when experience warns that a change is possible, and when the will to do or undo rests with the individual, and when the general dissemination of knowledge of the laws of health makes the right path plain.

It may seem at first a simple matter, but the persistence of habits that violate the first principles of nature's laws weakens irremediably the foundations essential to maturity.

What appear simple violations of these laws often explain unlooked-for results,

Alopecia in families will usually be found due to neglect of a pityriasis of the scalp, itself a result of the persistent and unnecessary constriction of the head by a tight hat.

In the few instances of hereditary blindness coming under my own observation the inheritance seemed clearly that of a wilful and determined overstrain of the eyes in a poor light in spite of warnings and even entreaties.

I have seen numberless instances in strumous or otherwise degenerate families, where abstinence, self-control, regular habits, and well-regulated exercise have defeated the family tendency for many years; this, also, in families of neurotic tendency, including, of course, asthma and allied neuroses.

Condition adequate to emergencies is the key-note to our harp of a thousand strings.

The maintenance by one's self of a sound mind in a sound body, the conservation of vital forces, is this condition *par excellence.* It is essential to daily regeneration and rejuvenation.

On a table in my library are carved too fabulous creatures with wings and claws and long necks engaged in mortal combat. Each monster has grasped the other's neck in its powerful jaws.

If these had been living creatures, victory might at first seem to be assumed for the one with the greatest vitality, who could longest resist strangulation, whereas, in truth, it would probably fall to the one in the best present condition, whose grasp would be the fiercest and whose sharp teeth might crush the spinal vertebræ.

In conflict with our ever-present enemy, disease, condition often decides the issue, even though condition plus inherited vitality is more potent.

What has already been said has involved so much of the influence of environment that this may be but briefly considered.

One cannot raise many rose-bushes in a sunless alley among tomato- and ash-cans and kitchen refuse.

Even the young oak will languish and die if environed by circumstances and conditions unfavorable to its nutrition.

The strumous child that passes its adolescence in a close office or on the saddler's or shoemaker's or tailor's bench makes but poor material out of which to build a lasting constitution.

The young man of neurotic tendencies with insanity or suicide in his family overstrings his sensitive nerves in the rush and worry of Wall Street and courts his family disease.

The atmosphere of the stock-room or the worry and excitement of the speculator's life are ill-suited to perpetuate the soundness of heart, brain, or kidneys in the man whose family has been marked by early degenerative disease. The weakling of the human race should certainly avoid the condition of trade or residence under which his parents succumbed.

Some years ago I was financially interested in a business in which many steel grinders were employed.

A large proportion of these came from Sheffield, England, where their fathers and grandfathers worked at the stone and died of consumption. Weak and puny children had followed suit.

INVESTIGATION INTO THE INFLUENCE OF TRADES UPON THE HEALTH OF 13,000 TRADESMEN.

Number under Observation.	Trade.	Age when beginning to decline.	Predominating Cause.
1257	Hat-finishers	32^{4}	
22	Potters (mould)	33	
661	Plumbers	34	Fever and lung diseases.
1445	Brakeman	35	Accidents.
99	Jiggermen (potteries)	35^{9}	
411	Locomotive-firemen	35	Accidents and diseases of kidneys.
3	Throwers (potteries)	36^{2}	
462	Printers	36^{6}	
1235	Painters	37^{3}	Painters' colic.
455	Pressers (potteries)	38	
126	Flint-glass bottle	38	
30	Dippers (potteries)	38^{2}	
514	Green-bottle makers	38^{5}	
31	Handlers (potteries)	39	
1247	Hat-makers	39^{4}	
26	Sagger-makers (potteries)	39^{5}	
1061	Cigar-makers	41	Throat and lung diseases.
297	Kilnmen (potteries)	41^{5}	
1022	Bricklayers and masons	42	Rheumatism.
15	Potmakers (glass)	43	
112	Switchmen	43	Accidents.
368	Railroad conductors	44	Rheumatism.
1269	Miners (iron)	44^{6}	
2735	Carpenters	44^{7}	
73	Hat-pouncers	45^{4}	
57	Glass-shearers	46	
933	Bakers	47	General debility.
39	Flint-glass (regulators)	47	
449	Locomotive-engineers	47^{6}	Diseases of kidneys.
149	Window-glass-makers	50	
76	Window-glass-cutters	52^{5}	
39	Window-glass-flatteners	53^{6}	

Collated from Reports of New Jersey Bureau of Labor, 1892–1895.

Some of these men could not abandon the trade of their families, and, working in close, wet quarters, frequently died from pulmonary disease.

As a rule they were far from vigorous, and the children showed clearly their inheritance.

Many, however, after a short trial in this country, took up other branches of business.

The change in these men was so often a subject of comment as to cause a considerable and steady secession from the grinding department.

A few years ago the Labor Bureau of New Jersey began an inquiry into the trade-life of workmen, and endeavored to ascertain the age at which they began to decline.

This work was never pushed to the extent of establishing its full value, but the following are some of the rather unexpected results:

Complete and thorough investigation in this direction would furnish a guide by which deleterious occupations could be avoided.

The report in one place says, "House-painters suffer from injuries from defective scaffolding as well as from lead-poison. Most of these tradesmen are laid off by disease after ten or twelve years' work. It is rare to meet an old painter without evidence of disease.

"Plumbers are rarely able to work at the trade thirty years. They become rheumatic or otherwise unfit. In England the death-rate among painters over 35 years of age is twice that of agriculturists, and this is probably true in this country."

Misfortune is not always to be regretted for men of impaired inheritance.

A moderate deprivation of the means for rapid combustion of the vital forces (for this is what it amounts to) may enable the son to defeat the tendency born of affluence for generations.

Few physicians have not seen instances of placid, comfortable old age in men whose fathers and grandfathers had wined and dined and raced, and died from the natural result of overtaxed kidneys, degenerate heart, or atheromatous arteries.

It may seem singular to cite the marriage of an individual as a potent factor in his defeat of unfortunate heredity, but man is peculiarly gregarious; what he feels and thinks, and especially what he becomes, very largely depend on the pressure exerted on him day after day by those in most intimate contact.

It is not assumed that marriage is essential.

There are those who conserve their energies by remaining single, or defeat a baneful inheritance by celibacy.

What I would maintain is, that men of such heredity, who marry(as most men do), assume a tremendous bias, either for or against their ancestral tendencies.

The observation might be made axiomatic, that a marriage where a healthful and congenial companion shares or bears the anxiety and wearisome burdens of life favors, nay, makes the condition necessary to withstand disease.

Reflection will show that this may be true even of hæmatophilia, and it is undeniably true of insanity, inebriety, tuberculosis, and degenerative diseases.

The young man of consumptive family who marries into a similar family doubles his own chances of consumption, for if either he or the wife fall ill with it, the other adds the wear of watching and anxiety to the recognized danger of infection.

If he marries into a robust line, it is the other party and not himself to whom the risk is increased.

I have often noticed a singular thing in this connection,—viz., that of men of feeble vitality and consumptive lineage developing the disease after marriage, losing the wife from the disease and themselves recovering, and this in some cases for two and three successive marriages.

A considerable number of these cases may be found published in the *American Journal of the Medical Sciences* for July, 1878, under the title, "Is Consumption Contagious?"

The sensitive man of neurotic and perhaps insane lineage, who finds the angel of the bridal day developing into a vixen or a shrew, is brought to face the grim fate of his ancestors as surely, if not as soon, as if the lineage of his wife were tainted like his own.

The man of iron ancestry may coolly brave year after year the nagging of a querulous and unreasonable woman, while the husband with an inebriate tendency actually hails his fate sooner or later in the nepenthe of intemperance.

Many an extravagant wife has dragged out the skeleton of her husband's family in the shape of latent criminality, or drawn him to the gambling table, to riotous dissipation, and an early ending of it all by apoplexy or Bright's disease. We surely need not prolong the catalogue of ills from unfortunate marriage.

To most men adaptation to circumstances is possible, but to the man who would defeat a baneful inheritance this may be impossible, and marriage to him is of vital importance.

May we not then hold it to be true

(1) That while by the laws of life all men will not arrive at 70, the allotted threescore years and ten, the chances for each are

not so unequal as at first appears. (2) That subjugation of the will, environment, and marriage are potent factors in defeating a baneful inheritance.

Catching Cold,—Its Cause and Prevention.[1]

BY FAYETTE C. EWING, M.D.

I THINK I may assert without fear of contradiction that there is no commoner morbid condition to which the human family is subject than that designated "a cold." People speak of having "caught cold," by which they do not mean that they considered the condition so desirable that they troubled themselves to lay hold on it, but rather the opposite, whereby the pathologic process inaugurated itself in their systems in spite of their desire and attempt to escape it. Again, almost invariably, the adjective "bad" is prefixed to "cold," so that by common consent we have only "bad colds." All this serves to emphasize a point I wish to make,—viz., the absolute fear in which that congestion of various organs resultant from meteorologic conditions is held by the laity. This is not surprising, when we consider that fully three-fourths of the diseases of the respiratory passages, constituting such an important class, originate in colds; and added to these are many, of other organs, that are indirectly due to the same cause. When we realize the importance of the subject, it seems strange that there should be no unity of opinion among physicians as to the precise manner in which it is acquired. Numerous theories have been advanced, yet none seem sufficiently substantiated to be accepted by the profession at large. Of those that have been held worthy of note, I may call attention to the following: Rosenthal declared that a lowered temperature, acting upon the peripheral vessels, excites contraction, shutting off the blood-current and causing congestion and inflammation of internal organs. This assertion is not above reproach, for very often parts that are not internal are affected. The Schneiderian membrane lining the nasal tract is more frequently attacked by inflammation than any other portion of the anatomy, and it is not internal, since it is always exposed to the atmosphere.

---

[1] From the Journal of the American Medical Association, January 16, 1897.

Seitz affirms that the morbid state we are discussing is occasioned by the removal of heat from some part of the body, resulting in a functional derangement of the heat-centres, with attendant pathologic changes in some organ possibly distantly removed from the part exposed. The fact that some time elapses between the exposure and the condition may be accepted as favorable to this theory.

Woakes believes in a vasomotor disturbance, using the term "modification of nutrition," arguing for a uniformity of type. He declares that there is a normal animal mechanism represented by the sympathetic chain of ganglia through its afferent and efferent branches.

Bosworth, more forcible and comprehensive than the others, accepts Seitz's theory in part, but attributes the effect to those nutritive changes that are ever progressing, and whose proper functioning is dependent upon the temperature being maintained at 98.6°F. He affirms that "in the ordinary phenomena of taking cold, we have still the results of a low temperature acting on the heat-producing processes, but in an indirect manner. The direct action of the cold is, as a rule, upon the surface of the body, but the resultant morbid condition is upon some organ remote from the exposed part. In both cases, however, the cause and the effect are the same, and the connection between the exposure and the resultant inflammatory condition is the disturbance of those nutritive changes in the tissue which result in the production of animal heat." The nutritive processes in every part of the body are controlled by a central nervous system from which there is a general distribution of force. The "nutritive changes" having been arrested, or interfered with, in a certain portion of the body, the central system contributing the same amount of force, naturally there results increased nutritive activity elsewhere, constituting inflammation. The fact that the nasal membrane, in this climate, is generally affected with more or less chronic inflammation makes it the point of least resistance and accounts for it being most commonly attacked. Bosworth illustrates this by citing the example of a chandelier, whose jets represent the nutritive processes and the supplying stem the central nervous system. Should all the jets be lighted at one time the result is even light, but when we turn off all except one, this one flares up unevenly with extra force.

Prevention of Cold,—Nature's Part.—That catarrhal diathesis which predisposes to colds may be hereditary or acquired. Its avoidance or prevention when once established can be accomplished only by a gradual hardening of the system, which must be educated to the making of an amount of heat to compensate for that which is lost under circumstances of extra radiation.

The conditions of life on this sphere render exposure inevitable,—we cannot dodge it. Rich and poor, high and low, one time or another, will feel the breath of this *bête noire* of our existence, who gives no quarter and shows no mercy. Only by fashioning ourselves to withstand its assaults can we hope to win in the "rough and tumble" battle with this "catch-as-catch-can" wrestler. Nature, our universal mother, seeming cruel, is often kind. She is the great equalizer, ever ready to give here for what she takes there. She will deal fairly with us if we trust her, but we must not ignore her rules. To-day, with irrevocable hand, she presses into place one chord of that divine instrument we call the larynx, and to-morrow, with compensating kindness, she sweeps the other across the median line, that it may vibrate in touch with its fellow, and where there was silence there is song. Should indifferent chance stop an ear, she makes its mate responsive to higher keys and lower tones, that the harmonies of life's little time may be not lost. She shapes the body to the shortened limb, that grace may move without a halt. Pomona-like, with hands full-fruited, she would give what is asked, but is zealous of our faith and thrusts nothing upon us. She would forestall the finger of time, and with its line of wrinkle trace a smile; she it is who lifts the weary heart that tears may be delayed. Nature is constantly striving to adapt herself to our necessities, but she may need time in which to weave for us a garment not made with hands. When heat is demanded, she endeavors to make it, but when her services have been spurned on so many occasions as to constitute a lengthened period, she cannot be expected to supply in emergency. On this principle she deserts the man who wraps his throat to scare away the roaring elements with a red rag. She is jealous of the rag, and the latter's services having been invoked in preference to her, she declines to interfere when it happens to be left at home. The hardening process should begin with infancy. Should the timid and captious knit their brows at this wholesome doctrine, I would add that we do not consider feather-headed mothers, nor that lighter genus, hysteric fathers, who are ever ready to trace a cold in their children to some supposed indiscretion of their more sensible wives. Intelligent discrimination is always required in the interpretation of hygienic rules. Idiosyncrasies are inevitable, and since no two constitutions are exactly alike, only directions that are generally applicable can be laid down. Each parent must discern any condition that would render the rule applicable to her child, or only in a modified form. A person may become strong, or delicate, through habit. Habit is a knife that cuts both ways,—he who wields it may turn it for or against himself. Nature gave us hair as a protection to the scalp, and but for habit one would contract cold not more readily from lack of covering on the head than from exposure of the face. Children from infancy should be accustomed to bare heads. That foolish woman, so solicitous lest the cold penetrates her baby's skull, might still her fears if she would pause long enough to recall her girlhood days, when habit enabled her to dance all night in a draughty ball-room with, mayhaps, nothing more substantial to shield her neck and chest from the flirting zephyrs than a coat of paint. The *fin de siècle* mother lolling in her cushioned carriage, with hands encased in fur and rubber bottles at her feet, need but drive through "Hell's half-acre" of the modern city to note the contrast in health between the ragged urchins with snow-numbed feet and her puny, pale-faced boy she left at home because it was "too cold to take him out." Truly, nature "tempers the wind to the shorn lamb." The free air grows the rose, and the sunlight gives it tinting, whether on rocky soil or velvet cheek. Coddling and care cannot save us from the demon we dread. A large proportion of the human family earn their livelihood in the open air, with the attendant exposure. In such climate as that of Western Oregon and Washington, where rain is steadily falling for half the year, people go about their business oblivious to it, so far as a consideration of the effect upon health is concerned. Daily contact soon inures them to it, and the diseases resultant from exposure are not materially multiplied. What necessity does for the poor, compelled to toil in rain or shine, and for the inhabitants of the Puget Sound district, we, who are more favored in environment, may do for ourselves by applying the universal law, which teaches that the more we house ourselves the less vigorous become our constitutions, in direct ratio as we pamper an organ its susceptibility increases.

Admitting the stability of our argument, we may pass to an enumeration of some of the special factors in the production of colds. The evils arising from over-wrapping have been lightly touched upon, but in discussing the very important matter of clothing it would be well to be specific. If we admit that the theory of catching cold is based upon an interference with nutrition in some portion of the body, we cannot deny the necessity for warm and comfortable covering that will insure equable protection for the heat forces in every organ. Opposed to this are the commonly-used chest-protectors that every druggist exhibits in his window as a preventive of lung and bronchial disease. Acting in a similar manner to the flannel throat-band or woollen muffler, they contribute to the delicacy of the parts they cover, and bring about the troubles they are supposed to prevent. Fur caps and boas are equally an abomination, and, according to Bosworth, the deaths in New York City resulting from the use of seal-skin sacques exceed those from small-pox. A lady proud of her $500 furs calls upon a friend and sits in a furnace-heated house in a temperature of 80° F. for several hours, because she would not think of removing so enviable and becoming a garment. She becomes overheated, goes home in a zero atmosphere, is suddenly chilled, and finds herself in bed the next day. This is not an exaggerated illustration of the evil effects of concentration of clothing. We are constantly being called upon to treat lesser ills, yet the thoughtless victims would scorn to acknowledge the cause. No clothing compares to wool as a preventive of heat radiation, because none is so light, porous, and elastic. It is also absorbent, but does not absorb into the fibre. Cotton, linen, and silk are heavier, less elastic, much less porous, and far better conductors of heat. The perspiratory glands assist us in the elimination of effete matter, and in using wool next the skin we have a material that takes up the perspiration and prevents a constant soaking in our excreta. One should wear wool the year round, and, now that so many weights are manufactured and of such soft texture, the garment may be adapted to the season. The better plan would be to confine oneself to the medium weight and have outer clothing suitable to the season. A person should wear just enough clothing to keep him from discomfort, no more, no less. Having observed in my practice the undesirable results from over-dressing, and being convinced of the invariableness of the law I am trying to impress upon my readers, I am tempted to say that given an intelligent subject, if the exposure is to be for a short time only, when the thickness becomes a question for decision, dress in the light rather than the heavy garment, and trust the heat-centres to supply the possible deficiency. Physicians, whose vocation calls them out at all hours, realize how frequently they miss their estimate of the weather, and find themselves too thinly clad, yet they may experience no ill-effects, because of the movement which increases the supply of animal heat. A man may subject himself to such condition as to cause a tremendously increased radiation of heat from his body, as, for instance, when in swimming, and catch no cold, for the same reason. The motion stimulates the heat-making machinery, and compensation is maintained, yet if a bath be too prolonged, the processes tire, are unequal to the strain, and the bather becomes chilled or cramped. As a rule, Americans load themselves with heavy clothing and have their feet—whose large amount of surface exposure makes them excessive radiators of heat—covered with thin stockings and paper-soled shoes. If we would only learn from observation of our more robust English cousins, one source of catarrh would be removed. Rubbers are useful enough in heavy rains, but we should not make ourselves dependent upon them because of wet streets, but guard against such dangers by wearing thick-soled shoes and woollen stockings. The feet are so much in contact with cold pavements and dampness that they are least adapted to scant covering. The air we breathe contains anywhere from 60 to 80 per cent. relative humidity, and along the seaboard it may range as high as 90 per cent. This moisture is necessary to the preservation, in a healthy condition, of the mucous membrane lining the air-passages. In mountainous climates, where the relative humidity is very low, the muciparous glands of the Schneiderian membrane become exhausted in their extra endeavor to supply the deficient moisture necessary to the dry air passing into the lungs. Watery vapor prevents desiccation, and if the air we breathe did not contain moisture, both animal and vegetable life would be impossible. Fishes die when removed from the water, though the air contains much more oxygen than the water, and all organisms would perish if deprived of atmospheric moisture. Dew and rain have been called the scavengers of the atmosphere. According to present scientific knowledge certain atmospheric particles are considered accidental, and of these dust occupies an important place. Of the various kinds of dust, some are very deleterious to animal life, though most of them are harmless. Yet, if we eliminated the aqueous vapor suffocation would result. Therefore we have a ready explanation of the unhealthful effects of furnace heat, which dries the air we breathe, giving the muciparous glands additional work, tending finally to their exhaustion, weakening the system in part and whole, and making a constitution incapable of enduring sudden and prolonged exposure. Children should be kept out in wind and sent out in weather. Every hour passed in the open air tends that much towards developing a constitution that will last to threescore and ten. This, of course, applies to children with normal or open respiratory passages. No child with obstructed nose can escape the cold-catching habit. The function of the nasal passages, which are sufficiently supplied with blood-vessels to elevate its temperature several degrees, is to cleanse and warm the air destined for the lungs, as well as arrest the multitudinous microbes with which it is laden. Whether on ice or snow, the shifting sunbeam is never cold ; no parent need fear the spectre that would seize the racing, rollicking, well-wrapped sprite that glows with its own heat. This brings us to the consideration of the daily bath.

The Americans are not a bathing people ; certainly not in the same sense as the Englishman, who has been known to take his tub travelling with him, that he might not forego what is a delight to him as well as a necessity. We build our palaces and construct marble pools that a Roman might envy, and hang our bath-rooms with paintings as suggestive as the Venus Anadyomene, worthy Apelles's fabled touch, yet we forbear to take the plunge. When we do perform our ablutions, it is for cleanliness alone. Remembering that cutaneous transpiration has much to do with the proper regulation of animal heat, and is largely dependent upon the functional health of the skin, we should be sufficiently impressed with the necessity of the bath as a matter of hygiene. Indeed, bathing for cleanliness is of secondary importance. Nothing conduces more towards strengthening the system and making it proof against colds, or breaking off the habit when once established, than the daily bath, which is best taken on arising. The water should be cold, direct from the hydrant, and in winter the temperature of the room at least 60° F. The sponge, shower, or plunge (selected according to the constitution of the bather) should be accomplished within a minute. It is well to begin with the sponge, which can be taken by all except the most delicate. The sponging can be taken as readily by wringing a towel sufficiently to prevent dripping, and sawing it rapidly over the body. A quick drying follows, and this, succeeded by a vigorous rubbing with a coarse linen crash, until the body is in a warm glow. The test is the after-feeling of well-being and warmth. Should these directions be carefully complied with and this reaction absent, there are some special reasons why the bath is contraindicated. The wrapping of a towel, wet with cold water, around the neck preliminary to the general dip, tends to stimulate the throat's resistance to sudden draught and cold.

Food exerts an undoubted influence in producing that vigor and strength of constitution that are required to withstand varying atmospheric conditions. In supplying the table the season should always be considered. We know that fatty and albuminous foods contribute more heat than vegetables and fruits; and for this reason such a diet is indicated for cold weather, and should be curtailed with advancing summer. The Esquimau, influenced partly by the law of environment and partly by that instinct which guides an animal in selecting what is best for its needs, subsists entirely upon fats and oils. The South Sea Islander, with as little design, turns to succulent vegetables and fruits. The exigencies of life, thus supplied by nature in opposite zones, are combined in our varying climate, and we should be guided into an intelligent application of what is best suited to our requirement. The system is capable of oxidizing just so much food, and when we overcharge it with heavy eating in spring, giving it more fuel than is necessary to keep the furnace heated to 98.6° F., the body's temperature, we find it overtaxed and the blood charged with effete matter, constituting spring fever. Thus we may appreciate the wisdom of the Catholic Church in establishing its period of abstinence in the early spring.

Electricity cannot be Stolen.

A German court has decided that electricity cannot be stolen. A man was arrested on the charge of having stolen several thousand ampres of current by tapping a light company's mains and using it to run a motor. The court, on appeal, ruled that "only a movable material object" could be stolen, which electricity was not, and, therefore, the man was acquitted.—*Electric Review.*

The Wearing of Veils, and its Effects Upon the Eyesight.[1]

BY CASEY A. WOOD, M.D.,

Chicago, Ill.,

Professor of Ophthalmology, Post-Graduate Medical School; Ophthalmic Surgeon to the Passavant Memorial Hospital, Chicago.

ALTHOUGH we hear and occasionally read of the ill effects produced by veils upon the eyesight, very little has been done in the way of determining the exact degree of interference with vision which these ornamental, and occasionally useful, protectors bring about.

The fact that the wearing of veils is productive of weak eyesight, headaches, and sometimes vertigo and nausea, is within the experience of every ophthalmologist. Not only are these effects produced by the eye-strain consequent upon the added efforts made by one or both eyes to see through or around an obstruction, but the irregular figuring on the veil itself is, in some instances, a source of annoyance to the wearer. As in other cases of abuse, the burden rests heaviest upon the weakest eyes, and probably the reason why one encounters so comparatively few instances of asthenopia directly due to veil-wearing is that the embarrassed eyes are able to overcome the additional strain where the vision is normal, the oculo-muscular system in proper equilibrium, and the general health good.

For the purpose of demonstrating the extent to which veils of various kinds influence the eyesight, I had selected for me a dozen typical specimens, and made with them a number of experiments. I now report the most important of these,—namely, that which refers to their direct effect upon vision.

It must be premised that a person having normal vision should be able to distinguish, with each eye separately, capital block letters (bold face type) a quarter of an inch square at a distance of six metres, or twenty feet, and to read with ease diamond print at a distance of ten to fourteen inches (25 to 40 centimetres). Individuals possessing this visual power may be said to have vision

[1] From the Boston Medical and Surgical Journal.

(or V) of 1. Any deviation from either of these standards is commonly represented by fractions, vuglar or decimal. Thus, in some instances, V $= \frac{1}{2}, \frac{2}{7}, \frac{3}{2}$; .50, .70, etc.

Now for the test. An individual possessing full acuity of vision in each eye, for both distance and near, was chosen, and the effect upon the eyesight was recorded after a trial with each veil, using the distant test-types at six metres and various other kinds of test-print for reading.

(1) The first experiment was made with a fine black net-veil having small black dots two inches apart and white flowers three inches apart. There are one hundred meshes to the square inch and the dots are one-sixteenth of an inch in diameter. Distant vision is reducted by it, in each eye, to two-thirds, and diamond print is read with difficulty through the meshes. When a spot presents before the pupil, bourgeois is the smallest type that can be made out.

(2) Single thread, chenille dot, black fish-net. Sixteen squares and sixteen dots to the square inch. Both distant and near vision very little reduced unless a dot be in front of the pupil, when it affects sight as with No. 1.

(3) Black, dotted, double-threaded net. Dots are one-fourth of an inch in diameter, and nine to the square inch. The distant visual acuity is reduced to from two-fifths to one-fifth, and print to from small pica to great primer, according as the object is seen *through* the open meshes or *around* a dot. All print is greatly blurred.

(4) Finest, plain black Brussels-net. Vision was three-quarters, and fine print blurred, but pearl could be read.

(5) Same as No. 4, with pin-head dots, nine to the square inch. Result of examination same as No. 4.

(6) Plain black *chiffon*. Vision much lowered; one-half for distance, and minion type in reading.

(7) White Brussels-net lace, with flower-spray four inches apart. Sixty meshes to the square inch. V $= \frac{2}{5}$, and pearl type blurred.

(8) Single-thread, dotted, square-mesh net. Forty-eight meshes to square inch, dots one-eighth of an inch in diameter, one and one-half inches apart. Vision only slightly reduced.

(9) Same as No. 8, but dots four times as numerous. V $= \frac{2}{5}$ when a spot presents directly in front of eye.

(10) Fine black net, like No 1, but with flower-spray three

inches apart. Result the same, but with spray before pupil vision is somewhat worse.

(11) White, double-thread net, four black dots and sixteen meshes to square inch. Very "irritating" veil. $V = \frac{3}{5}$, and minion type blurred.

(12) Same as No. 8, but dots larger. Vision only markedly lowered when dot is in front of pupil.

The above tests show

(1) That every description of veil affects more or less the ability to see distinctly, both in the distance and near at hand.

(2) The most objectionable kind is the dotted veil, although the influence of this variety for evil is more marked in some samples than in others.

(3) Other things being equal, in undotted and non-figured veils, vision is interfered with in direct proportion to the number of meshes per square inch.

(4) The texture of the veil plays an important part in the amount and kind of eye-strain produced by the veil. When the sides of the mesh are single, compact threads, the eye is embarrassed very much less in its effort to distinguish objects than when double threads are employed.

(5) The least objectionable veil is that without dots, sprays, or other figures, but with large regular meshes made with single, compact threads.

As I have said, it is not a necessary consequence of the wearing of veils that eye symptoms result. A healthy eye in a healthy body resists the strain of an impediment to vision just as it does other deleterious agents; and it is only when from other causes the eyesight is weakened that the wearing of an objectionable veil proves immediately and obviously hurtful. I have noted many cases of headache and painful vision, as well as other ocular symptoms, produced by veil-wearing in persons whose eyes are not overstrong; and I believe that this practice is one of the agents, not perhaps always recognized, that contribute to ocular discomfort.

Certainly it is not the part of wisdom to compel our visual organs to overcome unnecessary obstacles in the effort to see.

It has been urged in defence of veils that they are often required for the protection of the face, to keep the hair in order, or to retain the hat in place. If the happiness and comfort of members of the gentler sex are thus bound up in veil-wearing, they should at least give preference to those veils that do the least harm.

But what excuse can be urged for that not uncommon offence, the attempt to *read* through this unnatural screen? And yet such exhibitions are of every day and every night occurrence in places of public resort,—street-cars, railway trains, churches, theatres, concert halls, club rooms, etc.,—thus adding to the injury of defective distant vision the insult of eye-strain for near work.

Hygiene in Florida.[1]

BY GEORGE TROUP MAXWELL, M.D.,

Jacksonville, Fla.

THERE was never a time in the history of the race when the human mind was so active and prolific as during the latter half of the nineteenth century. In every department of knowledge, in science and in art, progress has been and is being made, and inventions and discoveries follow each other in such rapid succession as almost to bewilder the observer. Indeed, one is inclined to agree with Uncle Limus. When the first steamer went down the Ohio River, rude and rough in construction in comparison with the palatial structures that have since navigated that stream, coming unexpectedly, because unannounced, to the negro slaves on a Kentucky plantation, they became panic-striken at the approach of what appeared to be a supernatural monster, and all but Uncle Limus fled to the woods for protection. But Uncle Limus had a reputation to uphold. He was the foreman of the plantation. He therefore stood his ground, determined to brave the danger even at the cost of his life. The steamer came puffing and splashing, with a huge column of smoke ascending. Presently she passed; and when all danger from the horrid monster seemed over, the negroes returned to the field and gathered in admiration around the hero. Having sufficiently recovered from fright, one of them asked, "Uncle Limus, what you tink of dat?" Fully conscious of his importance, the old man straightened himself and replied, "De invention of God am great, but man can beat him."

---

[1] Address delivered at Sanford, Florida, before the Florida Medical Association.

Wonderful indeed are the results of human activity, and, in view of recent achievements, the right to say what is impossible can no longer be assumed.

Nor has medicine proved a laggard in the march of improvement. There is not a division of the complex science and art that has not felt the impetus onward and upward. This every reader of medical literature must know; but to one who, like myself, can take a retrospection of nearly fifty years of personal observation and experience, the result is as familiar as it is interesting, instructive, and encouraging.

It would be outside the lines marked out for this discourse were I to attempt an enumeration of the items of progress which have been evolved in every department of medicine in recent times. It may not be irrelevant, however, to call attention to that discovery which has lifted the formerly obscure but most important branch of our science, etiology, out of the gloom of hypothesis and conjecture into the clear light of established theory and absolute demonstration.

The medical profession quickly saw the applicability of the brilliant discoveries in bacteriology by Pasteur in their relation to the diseases of plants and the lower animals to the study of disease in man; and Koch and others soon flashed upon an astonished and delighted world "the germ theory of disease."

To this advance in our science the profession points with pride, for the reason that it is the foundation for vast improvement in both therapeutics and hygiene. Learning the causes of disease, the application of appropriate remedies becomes easy; and knowledge of the life-history of pathogenic germs simplifies measures of resistance to their attacks.

Perhaps the most interesting illustration of the value of this discovery, to us in Florida, may be found in the revolution it has wrought in the view of the cause, pathology, and treatment of our most common and widely prevalent disease,—malarial fever.

For a long time and until recently the belief was that malarial fever was caused by some invisible, imponderable, intangible but noxious effluvium or gas, a chemical product of decaying organic—chiefly vegetable—matter. This effluvium acted, it was supposed, primarily upon the liver, producing therein organic and functional disturbance. That large gland was believed to be the great emunctory, the "scavenger," of the system, whose chief if not sole function was to eliminate effete, poisonous matter, in the form of bile. It is now known to be the most important assimilating and one of the most essential secreting organs of the body. Bile was supposed to be an excrementitious liquid which in some undefined manner caused fever, which was called "bilious." Hence, naturally, the practice was to administer mercurials or other supposed cholagogues "to regulate the liver" and to pump out the bile. And, notwithstanding the fact that the treatment failed to effect cures, as it seemed to be logical,—and was under the then prevailing notions of physiology and pathology,—it was, and to some extent is yet, believed to be the perfection of science. Advancement in physiology and discoveries in bacteriology have changed all that, and the marriage between miasm as cause and deranged liver and bile as effects has been dissolved.

The germ theory of disease has so illuminated the subject that "he that runs may read." It is no longer conjecture; it is demonstration.

Prick the finger of a subject of malarial fever, and place a drop of blood under a microscope. It will be seen that the red corpuscles contain the organisms which are the cause of the disease. Administer appropriate doses of quinine, not only is the fever arrested, but examination of the blood shows that the germs are not now present. They have been destroyed by the germicide, and the *modus operandi* of the cure is explained.

A glance at the contribution which bacteriology has made to that most important division of medicine, the science of hygiene, will show its superlative value to the human race.

Since the days when ancient Rome,—two thousand years ago,—weary of ineffectual prayers and sacrifices to the "Goddess of Fever," turned in agony her tear-bedimmed eyes to the Goddess Hygeia, and with pathetic entreaty wooed and won her intervention, it has been known that pure soil, pure air, and pure water are essentials to healthfulness. She tunnelled mountains, built immense aqueducts, introduced gigantic sewers, and by thorough surface and subsoil drainage robbed her soil of superfluous moisture. The ruins of those hygienic structures are objects of intense interest to modern tourists.

The reputation of Rome was simply infamous. There was not, perhaps, as sickly a locality in the world. But upon completion of her sanitary measures there was an entire revolution. Not only the city but the adjacent campagna di Roma was rendered free from fever. Similar has been the experience of England, Scotland, and some of our Northwestern States. The best parody I ever read was upon that charming little poem of Poe, Annabel Lee, and was called, "This Aguish West Countree." That opprobrium no longer rests upon those States. To increase the fertility and value of their farms porous tiles for subsoil drainage were used. The primary purpose of the farmers was accomplished; and, greater achievement still, they made their homes healthful.

But, though the experience is old, the explanation is modern. It is now known, says Tomassi Crudeli, that "the idea so long held by the medical profession that there is a necessary connection between malarial fever and marshy soils is thoroughly exploded; the cause of malarial fever he declares to be a specific ferment (germ), which is not of exclusive paludal origin, and still less the product of putrefactive process. Malaria exists in soils of every conceivable variety, and of every age in geological time, and it is imposible to point to any micrological or chemical condition of the soil which can be said to be essential." The hypothesis that malarial fever is caused by a minute organism is as old as Varro; but its demonstration as a fact was reserved for our day. Since the acceptance of the germ theory the life history of many pathogenic organisms have been carefully investigated, and the connection between their presence in the blood or tissues as cause and disease as effect has been satisfactorily established. This knowledge has in many cases simplified treatment and rendered easy and certain the prevention of disease. Unhappily advance in therapeutics has been retarded by the difficulty of selecting germicidal remedies which can, without prejudice, be mixed with the circulating blood, and come in contact with the tissues. In these respects quinine is exceptional, and to that fact it owes its great value as a remedial agent.

In a hygienic point of view study of the life history of the malarial germ has wrought invaluable results. It is now known that there are three factors essential to its propagation,—heat, oxygen, and moisture. As the sun will continue to give heat and the air to supply oxygen, we must look to the elimination of the other essential, moisture, for the prevention of its malign agency. This is practicable. By thorough drainage the most malarial soil may be rendered innocuous. It is thus that that prolific source of suffering may be driven beyond the borders of our beautiful State.

Contrary to the view which long held sway, we now know that consumption is not a hereditary disease. We have learned, besides, that it is contagious, but, important fact, to contract consumption, there must be predisposition, either inherited or acquired. Consumptive patients do not communicate the disease to their offspring, *in utero*, but they do often transmit those peculiarities of organization which are characterized by feeble powers of resistance to attacks of the tubercle bacillus. This constitutes hereditary predisposition.

It is a fact of too frequent occurrence to have escaped attention, that persons of vigorous constitutions succumb to attacks of consumption as a sequence of inflammatory action in some part of the respiratory tract. My experience teaches that a large percentage of cases of consumption have their starting-point in pneumonia which has not been completely cured. Such are instances of acquired predisposition. The nidus being either congenital or acquired, exposure to the contagium, the bacillus develops a case of tuberculosis.

At the close of the war, when I resumed my professional studies, the first book purchased and read was "Niemeyer on Consumption," and I distinctly recall the startling effect of his declaration that "the great danger to a consumptive is that he may contract tuberculosis." For quite fifty years the profession had accepted as true the *dicta* of Laanec and Louis, that the first link in the morbid chain that constitutes consumption is the deposit of miliary tubercles. Now comes this distinguished author who declares that is among the last.

Bacteriology has since confirmed Niemeyer's opinion, and, besides, furnishes a scientific explanation. It is not uncommon to see persons with a predisposition to consumption who pass long lives without development of the disease. The exemption is due to the fact that they have escaped exposure to the bacillus.

Why is it that Florida has lost her once well-deserved reputation of being the finest climatic sanatorium on the globe? Why is it that even in the latter months of summer, the months when there are few, if any, visitors to the State, the season in which malarial fevers are most prevalent and violent, the deaths from consumption outnumber those from malarial fevers? The answer is easy and simple. It is because consumptives have for years been permitted to come by thousands to distribute and to disseminate the contagion in hotels, boarding houses, churches, theatres, and streets, all over the State, and nothing has been done to restrain their coming or to minimize the danger by the enforcement of sanitary regulation. The tubercle bacillus, once an exotic, has been transplanted to our soil, and by fertilization and cultivation has become domiciled, and like the fabled Upas has spread its death-dealing branches over the fair bosom of Nature's nurse, counting its victims among natives and long residents by thousands! Have steps been taken by our guardians of health to ameliorate or to improve the conditions I have described?

Another matter of as great, I think of even greater, importance as either to which I have directed your attention is our murderous public schools. This is of vital interest, not only to the present but to future generations as well. The criticisms I shall make are not confined in their application to the schools of this State. The fault lies in the method; and wherever the common school system obtains, the evidence of its injurious effect upon the health of children, especially girls, has been apparent. After a visit to the public schools of Boston, Lady Amberly said, "I never saw as many pretty girls in my life; but they all look sick." Certainly. How could it be otherwise? Shut in overcrowded, badly-ventilated rooms, on uncomfortable seats, under rigid discipline four to five hours a day, with a single recess of a few minutes; required to learn four to six lessons daily, that are as difficult for them as the abstruse sciences are for grown persons, how can it fail that their vital energies become depressed, if not destroyed? It is well known that mental work is far more exhaustive of vital force than manual labor. A writer of distinction said recently, "Put yourself—a full grown man— in the place of the pupil, and ask yourself how long you could stand the strain, with health unimpaired, of five hours continuous daily application in a close room."

But bad as what I have described is, it is not all, or the worst. After school hours the labor of the children has really just begun. Lessons are learned at home. Parents are, in fact, the teachers. The paid employés simply hear recitations. To the four or five hours spent in school several are added in hard study at home. The question of exercise in open air and amusement is ignored.

I have had some experiences, the recital of which may prove of interest. My youngest child, a boy, inherited a robust constitution. He was bright, ambitious, studious, and brave to daring. After confinement for months in the public schools of Atlanta, during a continuous daily session of five and a half hours, with one short recess, he spent three hours in hard study at home. In a short time a marked change in his appearance and disposition was perceptible. He became pale and thin, peevish and petulant. His appetite failed; he suffered from insomnia, and his courage deserted him,—he would become frightened at shadows. I took him from the public school and sent him to a private school in the country, hoping for benefit from the change. I was disappointed, and was compelled to withdraw him from school. At the most valuable portion of his educational life he lost eighteen months, but at the end of that time his health was completely restored. He was next sent to a private teacher, with the understanding that he should not be required to make more than three daily recitations. His health continued good, and his progress in education was satisfactory.

In a charming family with whom I boarded a few years ago was a bright girl of ten years of age. As I entered the porch one morning I found her engaged in study. Attracted by the number of books around her, I asked, "How many daily recitations are required of you?" Counting her books, she answered, "Here are six; but these are not all, there are two more." Astounded at the reply, I said, "Is it possible that you are required to recite eight lessons daily?" "Yes, sir," she naïvely said. "How many recesses are you allowed?" "We haven't any recess, sir; we have an intermission of five minutes to eat lunch at our desks." I told her parents that the curriculum, if persisted in, would kill their child or render her a chronic invalid. My warning was unheeded. Indeed, there was no escape. The alternative was, to deprive her of educational advantages in the public school or to continue to subject her to the murderous ordeal. The latter was chosen.

About a year ago the father of this sweet girl, who was now struggling through the critical period of development from girlhood to womanhood, came to me with the sad story of her almost complete collapse. She was now pale, anæmic, weak, sleepless, and without appetite. I recalled my warning, which he remembered, and told him her salvation depended upon complete withdrawal from school. This was done; and, after a year of rest, the child's health is almost entirely restored.

In order to reinforce my advice by the authority of one who had given the subject the most thorough and intelligent investigation, I sent to the mother a copy of the late Professor Clarke's epoch-making book, "Sex in Education,"—a work which, with its companion, by the same auther,—"The Building of a Brain,"—ought to be carefully studied by every parent, and especially by every one who is engaged in the responsible work of education.

Boys pass from youth to manhood without consciousness from sensation of the change,—certainly without discomfort; but how different is the experience of girls. The law of periodicity which dominates the sexual functions of girls, during the formative period of life especially, must be regarded, or dire consequences will certainly ensue. The discomfort and ofttimes severe suffering which women experience under the conditions hinted at are characterized by themselves as a departure from health. Nevertheless, female teachers, failing to appreciate or to properly interpret their personal experiences, and boards of education, absolutely ignorant of the broad anatomical and physiological differences between the sexes, place boys and girls in the same schools, subject them to the same requirements, with ofttimes serious and occasional permanently injurious consequences to those who are to become the mothers of future generations.

Speaking of the disastrous effect upon American women of the faulty methods of education, Professor Clarke said, "If these causes should continue for the next half century and increase in the same ratio as they have for the last fifty years, it requires no prophet to foretell that the wives who are to be mothers in our republic must be drawn from transatlantic homes."

The question of the comparative mental capacity and aptitude for learning of the sexes does not enter into this discussion. Without denying, but affirming, that women can learn as much and as well as men, the fact remains that there are anatomical and physiological differences between the sexes, and that these radical differences make it necessary that the *methods* of instruction shall vary. The rest which girls require periodically during the formative stage of life for their healthy development into perfect womanhood is not necessary for boys.

No child twelve years of age or under ought to be confined in a school-room more than two and one-half hours daily, and then with frequent breaks. Nor ought a child of eighteen years or less be required to study more than three or four lessons daily.

There should be one short session for the younger children and two for the older. Ample time for rest and dinner should be given. There should not be lessons to be learned at home, but employés should be required to do what they are paid for,—teach. With two lessons for each session, taught by the teachers, they would earn their salaries, parents would be relieved of the labor of instruction, the health of the children would be preserved, and thorough education be accomplished.

Perhaps the most senseless fad of modern times is that to which health officials attach almost superlative importance. I refer to vital statistics. I am conscious that such a declaration will excite surprise, for the postulate that, by the collection and tabulation of mortuary statistics the healthfulness of a city or State may be ascertained, has received almost universal acceptance as proven. Let us examine the subject. Is it true that a correct conclusion of the healthfulness of a locality can be drawn from vital statistics? After reflection, the experience of every physician will constrain a negative reply. For illustration: There are few diseases more responsive to the demands of appropriate treatment than malarial fever. Death from that disease is the rare exception. Do the mortuary reports show the number of cases? There may have been 1000 cases with very few deaths. How can the reports of the latter only determine the question of healthfulness?

Take another disease. Every physician of experience knows that dengue sweeps through a community, sparing few. Who does not know that death from that disease is of rare occurrence? In Charleston, S. C., there were 10,000 cases in 1850; and in 1880, between 2000 and 3000, without a death. What conclusion would have been drawn from vital statistics? Would they show that there had been one case of the disease in that city? No. But what would have been the testimony of the thousands who endured the tortures of that "bone-breaking" malady? Is it not absurd, therefore, to claim that vital statistics throw the smallest ray of light upon the healthfulness of a locality, State or climate? How much more sensible is the maxim,—"Take care of the disease-rate and the death-rate will take care of itself."

Professor Guitéras is authority for the statement that it was the custom of the aborigines of tropical America to change the location of their abodes every eight years. Experience taught those savages the lesson, which science explains, that when soil, air, and water have become contaminated by the wastes of living, which is only a question of time, the locality is rendered deleterious to health. But the measure of protection which was practicable for nomadic savages is impossible for civilized man. The former found no difficulty in breaking camp to escape the danger of accumulated filth ; but the latter must resort to other and more costly methods for safety.

Inventive genius has contrived appliances for conveying the dangerous wastes from proximity to dwellings. How to get rid of human excreta in the interests of health was a difficult problem ; but it has been happily solved, and the question of expense sinks into insignificance in comparison with the beneficent results. To-day officials charged with the duty and responsibility of preserving the salubrity of cities and States are either inexcusably ignorant or criminally neglectful, if they fail to afford the desired and necessary protection.

What has been accomplished in this direction in Florida ? There are only two cities, Jacksonville and Pensacola, which have made even a pretence to the employment of sanitary appliances. I shall not attempt to discuss the merits of the system of sewers in use in Jacksonville, except to say that in 1889 it was condemned in every detail by a sanitary expert. No improvement or additions have been made since, although a State Board of Health has been in operation all the intervening years.

During a visit to Jacksonville's pretty suburb, Riverside, I walked to the river shore. There I saw two sewers emptying their contents on the beach. Neither was submerged, and the outlet of each was in the air, and opened to the east, whence the prevailing winds blow.

It requires no stretch of fancy to arrive at the conclusion that the poisonous sewer-air is blown into every dwelling that is connected with those sewers. And this is called "sanitation !"

I ask your attention to a few figures. There are 8000 houses in Jacksonville. Of these only about 1500 have sewer connections. That is, there are at least 6000 families who employ methods which inevitably pollute and probably infect soil, air, and water.

At Pensacola only four of the sixteen miles of sewers contemplated in the original plan have been constructed. There are within the city limits about 4000 houses. Of these only 134 have sewer connections. Reference to these official figures shows that Pensacola is virtually without protection from that source. Except that in a few places tubs have been substituted for surface and shallow-pit privies, if any radical steps have been taken to improve the sanitary condition of any locality within the borders of this State, since the epidemic of 1888, I have been unable, after diligent inquiry, to learn the fact. The unsanitary condition prevailing during and which caused the epidemics of 1887 and 1888 are in *statu quo*.

In an able paper on "State Medicine," Dr. Porter said, "Artesian well-water and rain-water properly filtered are the only safe drinking waters; and the drinking of ordinary well-water, which is so general in this State, is a practice that cannot be too strongly condemned." That is sound doctrine. But where is its practical application? That the water-supply, especially of cities, should be the best obtainable cannot be questioned. Let us see how this admirable doctrine has been applied in our State. Jacksonville has an almost unlimited supply of hygienically pure water, millions of gallons of which are daily wasted. There are a few more than 6000 sources of supply in this city. Of these considerably more than half—3500—are from shallow wells, which Dr. Porter declared cannot be too strongly condemned. More than half the population of Jacksonville are using daily dangerous water. This is a matter of compulsion. With an unlimited supply of wholesome water easily accessible more than half her population are denied its use. Her enterprising citizens have voluntarily incurred a large debt to change and improve this condition of things. Preparations were begun more than a year ago, and are now being pressed to extend the pure water to every section of the city. Difficulties arose and have retarded this essential work; but if a hand has been lifted or a word spoken by the State Board of Health to remove them, the public is in ignorance of the fact. These preparations are being conducted with such haste as to jeopardize the item of security in construction. Why? Because the State health authorities stand ready with an interdiction against the prosecution of the work, after the 30th of April, for six and a half months.

Of course, this obstruction to the completion of measures which the health officer recognizes as essential to healthfulness is enforced under cover of the pretext of giving protection to health. Dr. Porter declares that "the consensus of medical opinion in the South is against extensive upturning of earth during the summer]months." Is there anything more unstable than "the concensus of medical opinion?" History shows that the consensus of medical opinion has often favored the most absurd hypotheses. A little more than a score of years ago the medical profession was a unit upon two questions in regard to yellow fever which are now hotly contested by health officials,—viz., its local origin and non-contagiousness. These views were embodied in the volumes of La Roche. I was surprised to find Dr. Porter referring contemptuously to that great work as "musty with age and redolent with the odors of long ago exploded theories," and he adds, "Surely Dr. Kenworthy does not quote La Roche as a medical authoriety of *to-day* on yellow fever." Had the sagacious doctor waited a few years, he would have found Surgeon-General Sternberg, in an elaborate article on yellow fever, referring his reader for "proofs of non-contagion to the classical work of La Roche." Pope's inquiry finds application here,—"Who shall decide when doctors disagree?"

The question is not whether there is a consensus of, but is there reason for, the opinion? Why is extensive upturning of earth in summer at the South condemned? My conviction is that it is *because it is the South.* There has not been a day since the national goverment was framed that there has not been spiteful, slanderous flings at the South by people in certain sections of the country. For confirmation of what I assert read the daily papers, the pulpit utterances, and the debates in Congress.

During the existence of negro slavery the South was pictured as the home of aristocratic barbarians, and thus European immigrants were made to "go West." After slavery was abolished, the South was converted into a pandemonium by reconstruction. That ended, the South began to rebuild her waste places and to recover from the losses of a devastating war. Never in the history of Florida were there such increase in desirable population and growth in substantial prosperity as during the decade from 1876 to 1886. Meanwhile the enemies of the South, having the advantages of high official position and the control of money, were busy manufacturing a "consensus of medical opinion in the South" by indoctrinating heretical views of yellow fever, and its relation to our section, with such success that, when the epidemics of 1887 and 1888 furnished the desired opportunity, the seeds of panic and fright were sowed, and the harvest garnered. The entire South was stigmatized, and our beautiful and healthful State was denounced as "the point of danger" and the "gateway" for yellow fever.

I ask for one good reason why excavations are dangerous at the South, but safe at the North? Is there a radical difference in the nature of the soil of the two sections? I do not so understand it. Is there a lower range of temperature in summer at the North than at the South? Meteorological records answer, no. Is there a difference in the character of the water which falls from the clouds at the North and that which refreshes the earth in the "Sunny South"? Or is there a variance in the constituents of the atmosphere North and South? Who dares say there is? I have enumerated the elements of climate of the two sections, does the comparison show any logical ground for the accusation against the South?

This whole business is disgusting, and worse. Some Northern popinjay, "dressed in a little brief authority," sings, "Yellow fever is a disease of warm climates," and the Southern cuckoos echo, "That's so." It is generally known that never in the history of Jacksonville were such deep and extensive excavations made as during the epidemic of 1888; and it is equally well known that not the slightest effect upon the course, duration, or fatality of the disease was perceptible. Indeed, the percentage of deaths was unusually small. It would seem that no severer test of the soundness of that "consensus of medical opinion" could have been made, and the result was an emphatic refutation.

Southern health officials, neglecting to think, but blindly accepting as true the dicta of Southern enemies, many of whom have no personal knowledge of yellow fever, involve themselves in inextricable dilemmas. They proclaim that yellow fever is an exotic and must be imported, and then forbid Southern cities that are striving to introduce what are universally admitted to be essential sanitary appliances from completing them, because, forsooth, excavations in summer will cause yellow fever! Can an exotic which most be imported arise from a local cause? Yellow fever is confessedly endemic at Key West, where there is no soil to be upturned. How is that accounted for?

To the regulation forbidding excavations Florida's health officer complaisantly grants exceptions. Cities are permitted to excavate for repairs in cases of leakage of sewers, gas, and water-pipes. These are denominated "exigencies." The introduction of sewers, etc., are called sanitary essentials. Both require excavation. Why excavations for "exigencies" are unattended with danger—as has been proven in Jacksonville—while the same made for "essentials" will cause yellow fever is beyond my comprehension; unless, indeed, there is an understanding with the microbes that they will not bite in the former case, but will in the latter.

I shall take the liberty to introduce here, parenthetically, an explanation and an amend. I received a letter recently which called my attention to the fact that there are lepers at Key West. It was said that four of the lepers had married, and had young families. In my address on retiring from the presidency of our local society I referred to the subject, and said that neither the representative of the marine hospital service at that place nor the State health officer had taken a step looking to the suppression of that horrible disease. I have learned since that I was misinformed, and, in consequence, did injustice to Dr. Porter, which I regret. I was gratified to learn and take pleasure in declaring that Dr. Porter did appreciate the gravity of the situation, and took action on the case.

In a letter of recent date, from Dr. R. D. Murray, he said, "There are a few lepers in Key West. Dr. Porter, at my solicitation, caused the first American action in favor of restriction, but he was defeated by a Jacksonville personage of high degree." Of course, I do not know who the person of "high degree" is, who wields a "power behind the throne greater than the throne;" but the fact squints broadly at what is extensively believed,—political influence.

In a paper read before this society, in 1890, Dr. Daniel, at the time president of the State board, said, "But a large majority of the people recognize only one object to be attained by the creation and support of a State Board of Health,—viz., the prevention, by exclusion or suppression, of yellow fever." Undoubtedly the doctor gave expression to the public sentiment as it existed and still prevails, which he manifestly regretted; but he little suspected then that would become the controlling idea of the State Board of Health. But such is the case; for, if the board has instigated or enforced one measure of hygiene in any locality, or, except by vaccination, taken a step to prevent or suppress any disease, except by quarantine against yellow fever, it has been kept a profound secret. Even that section of the law requiring visits of inspection has been ignored. Preventing the invasion of the State by yellow fever seems to be regarded as its only duty, and quarantine is its sole reliance. Within the past year there have been in Jacksonville measles, whooping-cough, scarlet fever, diphtheria, and small-pox, all contagious, and some ofttimes fatal disease. The health officer has been notified, but has seemed to regard even his presence unnecessary. Suppose there had been even a suspicious case of yellow fever, the fact would have been flashed over the wires to all parts of the world, and the activity of the health officer would have excited universal attention. You will recall the incidents connected with the latest development of yellow fever in this State. When the health officer of that city reported two deaths from the disease at Pensacola, and Dr. Wall declared its presence at Port Tampa, the energy of the health officer was almost superhuman. Extra trains were employed, and the officer hastened from one extreme of the State to the other with remarkable celerity, and the greatest publicity was given to his words and deeds. You can draw the contrast.

Of quarantine, Dr. Ernest Hart, of London, the editor of the *British Medical Journal*, said, "We, in England, are coming to reply less and less on quarantine. The American public and American journalists are being misled by the importance which the health authorities, are attaching to it. Quarantine has everywhere been ineffectual. It has been discarded in England for twenty-seven years." It has been my effort for years to impress the people of Florida with the fact that they are being misled by the health authorities who place their sole reliance on quarantine, to the total neglect of municipal hygiene.

Until the close of the first quarter of the present century, throughout its previous history, yellow fever was a disease of Northern cities. Since it has rarely prevailed in those cities, what is the reason for this long immunity? Surgeon-General Sternberg explains. He says, "Of all measures of prophylaxis, those which relate to the sanitary improvements of cities and towns liable to become infected are, perhaps, the most important. Municipal hygiene has made great strides since the early part of the present century, and it is probably to this fact more than to any other that certain Northern cities, which formerly suffered severely from yellow fever epidemics, owe their long immunity from such visitations,—*e.g.*, New York and Philadelphia." How invaluable is this lesson to Southern cities! Yet, how entirely neglected!

(TO BE CONTINUED.)

THE ANNALS OF HYGIENE
PUBLISHED MONTHLY
SUBSCRIPTION TWO DOLLARS
A YEAR, IN ADVANCE.
Address all communications to
UNIVERSITY OF PENNSYLVANIA PRESS

EDITORIAL

All subscriptions to "THE ANNALS OF HYGIENE" are taken "until ordered discontinued," and no agent has authority to make any other arrangement. At end of time to which subscription has been paid or promised, a bill for a year in advance, with return envelope, is sent, and if journal is no longer wanted, the subscriber should mark "Discontinue" on the bill and return to us. A failure to so return bill is considered an order to continue.

COMMUNICATIONS SOLICITED.

We are always anxious to receive short communications—500 to 1000 words—on practical subjects pertaining to hygiene. To any one sending us an acceptable article, we will forward THE ANNALS OF HYGIENE for one year *free*.

The Happy Medium.

IN one of our medical journals a writer comments on excessive physical exercise as a cause of nervous prostration; he contends that an excessive, but misdirected, zeal for the preservation of health and the cultivation of the greatest possibilities of the physical, or muscular, system has a tendency to deteriorate the nervous system, and thus to defeat its purpose.

In truth, man has departed from nature and natural methods of life, and is trying to neutralize the inevitable penalties of this departure by a resort to artificial means, but it will not do.

Man is an animal, designed for adaptation to the surroundings and influences of nature and natural laws; he has seen fit to sever his allegiance to nature, and he must suffer in consequence thereof; he cannot, by artificial means, nullify the evil influences of the artificial agencies with which he has surrounded, and to which he has accustomed, himself.

When one reads the history of the invasion of England by the Danes, he cannot but be impressed by the physical magnificence and the mental inferiority of these children of nature, who lived not in houses, but roamed about in the open air, very much as do lions, tigers, elephants, and all the rest of the animal kingdom, save the, so-called, civilized human animal.

The highest type of humanity is, of course, that in which physical and mental culture are evenly balanced; but this highest type is an Utopian conception, against the realization of which the instinct, or perversity, of humanity seems to be in constant and determined warfare.

Exceptional individuals have been, and are, and ever will be, well-balanced mentally and physically, but the great mass of humanity ever has been, is, and ever will be, over-developed in the one and under-developed in the other direction, as the fashion, or tendency, or instinct, or perversity of the times may dictate.

It is, we believe, a mistake for one to suppose that a course of physical culture will undo the evil effects of an artificial life; that the gymnasium will neutralize the ball-room; that a fifteen-mile walk will nullify the damage of a debauch; that one hour on horseback will offset eight hours' strain in the counting-room; but a little of nature will counteract, to some extent, the evil effects of art, while at the same time excess will defeat its own purpose. In this we fully agree with the author quoted.

Living, as we do, at a health-resort (Atlantic City), we are daily made aware of the fact that they, who, warned of the need of rest, recreation, recuperation, when they take it, do so with the same lack of judgment, prudence, and balance that has characterized the work or the social life that has made this recuperation imperative. The remedy is as unintelligently applied as was the cause,—that is to say, heedless, reckless, thoughtless consumption of energy, which implies consumption of tissue, has produced the break-down, and heedless, thoughtless, reckless consumption of energy and tissue is resorted to as the remedy. Can we not induce humanity to strive for the happy medium?

Safety from Lightning Stroke in Cities.

A curious fact connected with deaths by lightning has recently been noticed in Europe. It appears that, as compared with the country, towns, and especially cities, possess remarkable immunity from lightning strokes. The statistics which have been compiled on the subject show that between 1800 and 1851 there was not a single death by lightning recorded in Paris, and that only one person out of each million that die in London is taken off by a discharge from nature's electric battery. Between 1851 and 1895 only three persons were struck by lightning in Paris, and only one of these three cases resulted fatally. In Berlin only five persons have been struck by lightning since 1713.—*College and Clinical Record.*

NOTES AND COMMENTS

The Lowering Death-Rate.

There is certainly no more astonishing and gratifying fact in modern civilization than the enormous decline and still progressively decreasing death-rate of the more progressive and best-governed countries. We have in England a proof of the fact, which, owing to the length of time over which they extend and the accuracy of the statistics, brings the result clearly before the mind. Estimated by quinquennial periods the general English death-rate per thousand from 1858 to 1895 was as follows: 22.22, 22.58, 22.42, 21.96, 20.79, 19.40, 18.90, and 19.04, respectively. In London alone, the largest civilized city in the world, the rate has been reduced to about 17, while certain districts of the metropolis have reached as low a rate as 14, 13, and even 12.

In the United States, with less concentration of population in large cities, we must confess the shameful fact that human life is more recklessly and needlessly sacrificed to the brutality of politics and sanitary heedlessness than in older countries. It is nothing less than a disgrace that in our smaller cities, and with the injuries of bad hygiene less necessary, we yet are killing off our citizens at the rate of from 5 to 10 per 1000 faster than in European cities. Think of what this means in a city the size of Greater New York. If her death-rate is 5 per 1000 greater than it need be, one shudders to contemplate the many thousands of citizens needlessly murdered every year.

In some of our cities the condition makes this fact still more evident and startling. Accurate figures are not before us as we write, but we believe that in a number of moderately-sized cities the death-rate has been reduced to a remarkably low figure. It has lately come to our notice that in one of our cities, Buffalo, by the persistent and heroic labors of the energetic health officer, the rate has been reduced to 11.67. If we are not mistaken, this is the lowest ever made by any city of the world of equal size. If the saving of one life is worthy of medals and honors, what kind of medals and honors should be awarded to Dr. Wende for the thousands that are living in that city to-day, who under a less thorough-going sanitary management would have died? And, on the other hand, what rewards should be given other cities where the death-rate is double that of Buffalo? Perhaps their problems have been harder and the difficulties more insuperable, but perhaps, also, they have not. Leastwise, they have not been so proportionately to the contrast in the dead figures.

Buffalo's death-rate in the year preceding Dr. Wende's accession to the office of health commissioner (1891) was 23.48 per 1000 population; prior to that it had averaged above 20 per 1000. In 1892 the rate was reduced 19.98, to 19.03 in 1893, to 16.76 in 1894, and to 13.95 in 1895. For the first six months of 1896 the rate is 11.67, with prospect that the year will see it not far from 12 per 1000.

All physicians know the essential prerequisites of such a reduction of disease: A reorganization at once upon a thoroughly business-like and scientific basis of the health department and the stamping out of the causes of disease. In Buffalo the immediate reporting of cases of contagious disease by telephone was made mandatory; visitation and vaccination in the public schools instituted; the sealing up of an emergency inlet of sewage-polluted water-supply followed. Weekly examinations of the water are continued to this day; a thorough and watchful examination (with prosecution of delinquents) of all the conditions surrounding the milk-supply was made; food and drug inspection; tenement house inspection; a justly tyrannical oversight of all drainage, plumbing, etc.

It must not be forgotten, also, that the death-rate alone does not represent the expense either in suffering or dollars to the community. Dr. Farr estimates that for every death there are on the average two years of illness in a given community. It is needless to emphasize the tremendous significance, to those with open eyes and humanitarian feelings, of the thousands of years of prevented illness and suffering, shown in the foregoing figures.

There are many lessons to be gleaned from these figures, but there are one or two that we cannot omit to notice:

1. In a general way it cannot be denied that this, the greatest good that has been brought to humanity, is in the main due to medical science, and to the virtue of medical men. Either in the long historic series of preparation for the realization of the endeavor, or in actually and practically working it out, or in both, the medical profession has undoubtedly been the chief instrument. Without undue self-satisfaction, we may lay no little emphasis

upon the facts and justly claim that although our work is with disease, and our wage drawn from the conflict with disease, yet there is not one lay citizen more glad, probably none so genuinely happy as we, that we are stamping out disease and death. Surely few or none are so unsatisfied with the result, grand as it is, and so resolutely determined to go on and make the blessing still greater. We have reduced the death-rate in the last twenty-five or thirty years of small-pox from 219 to 22 per 1000; of typhoid fever from 373 to 135; of typhus fever from 81.4 per million to 2; of phthisis from 2565 to 1512, and so on. As to scurvy, leprosy, the plague, cholera, malaria, etc., they are fast becoming mere names in the history of medicine. But is the community grateful? Witness our half failures and half successes, with more absolute failures, to wrench from the public even the simplest essential medical practice acts! The public loves its quacks far more than it does us.

2. And what is this precious public for whom we labor, not only not doing for the elevation and protection of the profession, but what is it doing for its own sake, more directly, in founding and supporting bacteriologic and hygenic institutes, boards of health, etc? If we had the money wasted on paper-cutters, pocket-books, and luscious luxuries by our legislators we could pay the expenses of a half dozen such institutes and save the lives of a hundred thousand people in a few years. Suppose even we could have a few of the millions now given as bribes to fraudulent pensioners! This public can endow theologic schools and chairs to teach boys Hebrew, Latin, etc., but where is the endowment to be found to endow medical colleges or chairs, where shall be taught the saving of life?

3. Not only may we complain of not being helped, but we have to fight against opposition. Take the crying abuse of turning a medical health officer out of office in obedience to the criminal demands of "practical politics." The place-hunter and spoilsman must have his turn regardless of the community's health and rights. The term of office of an officer of health should and must be made unlimited and solely dependent upon success and capacity. It is simply disgusting that just when the year or two of experience has begun to fit a man for the efficient discharge of his complex duties, he should be turned out to make way for a novice.—*Journal of the American Medical Association.*

The Wicked House-Fly.

"I'll hide my master from the flies as deep as these poor pick-axes can dig."—*Cymbeline.*

At the August season, when the summer dog-days are with us, the mighty insect Diptera, of the noble family muscidæ, particularly the musca domestica or the musca harpya, commonly mentioned in the vernacular as the house-fly, makes his presence seen and felt. From the earliest times the ancestors of this species were known to be most malicious, and at the same time as a plague most unaccountable.

When the Lord threatened Pharaoh that he would send "swarms of flies upon him," Pharaoh was probably not aware that the mere presence of the fly insured the planting of plenty of pathogenic microbes, and it is probable that the corruption of the land by reason of the swarm of flies (Psalm cxv. 21) had a great deal to do with the death of the first-born in the plague next succeeding.

"Dead flies cause the ointment of the apothecary to give forth a stinking savor," says the good book (Eccles. x. 1), and it is morally certain that, in these bacteriologic days, not only dead flies but flies of all kinds are known to be carriers of contagion.

"The proboscis of the house-fly," says one of our popular encyclopædias, "is a very interesting object," a remark almost paralleled by that attributed to the late Artemns Ward concerning the kangaroo. "The kangaroo," remarked Artemus, reflectively, "is an amoosin' cuss." "The proboscis of the fly is the greatly developed 'tonguelet,' or lingula, the upper part of the under lip, but with these are combined lancets formed of the metamorphosed maxillæ" (Chambers). Not only may this weapon infect the tiny wound made in the skin, but bacteria themselves develop in the intestinal canal of the insect and are ejected on every accessible object of food or furniture. This is the well-known "fly speck" abhorrent to the good housewife. But the measure of the iniquity of the house-fly does not end here. As he has a decided preference for a diet of decaying garbage, putrid sores, or rotten carcasses he alights upon them, and without stopping to sterilize his feet afterwards he flies to madame's kitchen, where he dips his feet jauntily into the iced tea, deposits a "speck" or two on cut bread just as it goes to the table, or annoys madame herself by maliciously alighting near the corner of her eye.

It needs no philosopher, no Pasteur or Tyndall, to show the infinite capability of the fly as a carrier of infection. Bacteriologists have traced the infection carried by flies until there is no longer any question of the fact. Lucien Howe remarked the frequency with which the fly is the most probable source of contagion in the Egyptian ophthalmias. When flies walk over a gelatin culture, bacteria develop in their tracks. It is proper to say that the constant irritation of the lid produced by fine particles of sand, predisposes to the development of the bacteria when once deposited. The observation of Professor Howe, however, is not new, for M. Sonnini, years ago, in speaking of Egypt, said, "Of insects there the most troublesome are the flies. Both man and beast are cruelly tormented with them. No idea can be formed of their obstinate rapacity when they wish to fix upon some part of the body. It is in vain to drive them away; they return again in the half-same moment, and their perseverance wears out the most patient spirit. They like to fasten themselves in preference on the corners of the eyes and on the edge of the eyelid. . . . The Egyptians paid a superstitious worship to several sorts of flies and insects. If then such was the superstitious homage of this people, nothing could be more determinate than the judgment brought upon them by Moses. They were punished by the very things they revered, and though they boasted of spells and charms, yet they could not ward off the evil. How intolerable a plague of flies can prove is evident from the fact that whole districts have been laid waste by them. Such was the fate of Myuns in Ionia and of Alarnæ. The inhabitants were forced to quit these cities, not being able to stand against the flies and gnats with which they were pestered. Trajan was obliged to raise the siege of a city in Arabia, being driven away by the swarms of flies. Hence different peoples had deities whose offices it was to defend them against flies. Among these may be reckoned Baalzebub, the fly-god of Ekron, Hercules Muscarum Abactor, and hence Jupiter had the titles of apomnios, muigros, muiochoros, because he was supposed to expel flies, and especially to clear his temples of these insects."

The Hebrews also had the same superstition, as appears from Josephus, who narrates that "Ahaziah, as he was coming down from the top of his house, fell down from it, and in his sickness sent to the Fly, which was the god of Ekron, for that was this god's name, to inquire about his recovery." A foot-note states that the "god of flies seems to have been so called, as was the like god among the Greeks, from his supposed power over flies in driving them away from the flesh of their sacrifices, which otherwise would have been very troublesome to them." In literature the fly has been execrated from time immemorial. Persons who forced themselves into other men's entertainments were called flies, as a term of reproach, and "in Plautus an entertainment free from unwelcome guests is called hospitium sine muscis, an entertainment without flies; and in another place of the same author, an inquisitive and busy man, who pries and insinuates himself into the secrets of others, is termed musca. We are likewise informed by Horus Apollo that in Egypt a fly was the hieroglyphic of an impudent man, because that insect, being beaten away, still returns again; on which account it is made by Homer an emblem of courage."

But the wicked fly, notwithstanding his demoniac doings, has had his defenders, some from pure benevolence, as Tristram Shandy's Uncle Toby: "So," says he, one day at dinner, to an overgrown one which had buzzed about his nose and tormented him cruelly all the dinner-time, and which, after indefinite attempts, he caught at last, as it flew by him, "I'll not hurt thee," says my Uncle Toby, rising from his chair and going across the room with the fly in his hand, "I'll not hurt a hair of thy head: go!" says he, lifting up the sash and opening his hand as he spoke, to let it escape. "Go, poor devil, get thee gone; why should I hurt thee? This world, surely, is wide enough to hold both thee and me."

Another defender was Oldys, whose two stanzas, according to D'Israeli, were occasioned by a fly drinking from a cup of ale, the favorite potion of poor Oldys:

Busy, curious, thirsty fly!
Drink with me, and drink as I.
Freely welcome to my cup
Couldst thou sip and sip it up;
Make the most of life you may,
Life is short and wears away.
Both alike are mine and thine,
Hastening quick to their decline,
Thine's a summer. Mine no more,
Though repeated to threescore!
Threescore summers when they're gone
Will appear as short as one.

But however sweet and delicate the strain of Oldys, we cannot forget that this is not the age of sentiment, and we must therefore insist, in the interest of public health and suffering humanity, that the fly must be excluded from our houses by every possible barrier ; he must be kept away from our food-supplies by every possible means, and if he persists he must be destroyed with no less sternness.—*Journal of the American Medical Association.*

Safe Drinking Water for Travellers.

Mr. Budgett Meakin, a globe trotter of renown, writes for a London newspaper some cautions about drinking water away from home. He says, "It is my opinion that it is a practicable undertaking to procure good drinking water abroad, derived not only from personal experience in France, Spain, Italy, Switzerland, Germany, Holland, Belgium, etc., on the continent of Europe, but also on all three of the other continents. Not that the liquid supplied has always been of ideal purity, but that I have never suffered in any way from having remained throughout stanch to my pledge to abstain from all intoxicating liquors as beverages, though I must confess to the charge of a somewhat immoderate use of drinking water. In almost every large town on the continent I have been surprised at the quality of the supply, regarding which I have invariably made inquiry of local people other than hotel proprietors, who can hardly be considered disinterested persons. Wherever there has been the least doubt, I have felt safer in using aerated water as likely to be the best procurable on the spot, or when doubt was strong, Apollinaris or Hunyadi, or other mineral water. When these were (very rarely) not procurable or insufficient, I have had my drinking water boiled for at least ten minutes and, if need be, filtered. In such cases tea has always been my stand-by, a small boxful of a decent quality being always ready in my hand-bag. For filter, let me warn tourists against all stone or charcoal block systems after they are once clogged and work slowly. The block must then be thrown away and replaced by a new one. For this reason the filters that can be recharged in a few moments with fresh charcoal, giving an absolutely new medium as soon as required, are far preferable. All others soon become sources of danger instead of protection. The filtering when needed should precede the boiling, unless soup is required, though it is astonishing how often this natural order is thoughtlessly reversed. A pocket or small table filter can easily be carried in the lunch-basket. It is well to inform the waiter on your arrival of your teetotal principles before he begins to recommend the cellar, and to insist, on that account, on having the water-bottles on the table and in the bedroom thoroughly well washed and refilled for your use. It is no use telling me that wine is purer, for I have seen how wine is made, and have trodden the wine-press myself in Spain. When one is driven by thirst to doubtful water, the best plan is to rinse the mouth well and gargle, or even to wet the face, neck, and hands as well. Careful mouth-washing after rich food is an invariable ally to the total abstainer, and is invariably practised by the Mohammedans, the abstemious races of India, and many others. Before filtering muddy water, a little water will precipitate much of the suspended matter, and so will other substances less convenient in travelling. On country excursions there is no preparation like a bottle of cold, unsweetened tea, just bitter enough to prevent a mouthful being swallowed after the thirst is quenched. I have found an average of one pint a day sufficient for long rides in the sun in summer. Thus, with a little care, the subtle excuse of bad water is disposed of, an excuse which does more evil than we hear of in England. I am convinced that more travellers suffer from eating too much meat, and that too fast, than from the water, and from inattention to the regular performance of digestion, which is an invaluable index. My own custom is to eat in every land the local food with such exceptions as pigs, carnivorous things, putrid (not rare) meat and shell-fish; and I have been duly thankful in every clime for the best of health and good sleep.

Chronic Constipation of Infants.

The chronic constipation of infants who are fed artificially is commonly due to a deficiency of fat in the food, says Emmett Holt, in Pædiatrics. By far the largest single ingredient in the stools of the healthy infant is fat, and this, he argues, is evidence that food of an infant should contain more fat than is required for nutrition, the use of the excess being to keep the bowels in action. Human milk contains a larger percentage of fat than cow's milk, and when the latter is given diluted the disproportion in the percentage of milk is still further increased. By raising the percentage of fat in artificial food to four or five per cent., Holt states that constipation will be rendered a rare occurrence. Neither cane- nor milk-sugar has much, if any, effect in preventing constipation, while malted foods have a certain influence, due, probably, to the laxative action of the maltose. Yale points out that gentle massage of the abdomen relieves constipation in some cases; the massage is made along the course of the large intestine from the cæcum to the sigmoid. In cases in which the constipation is associated with large, hard stools, it has been found very effectual.

Purification of Water.

The United States Consul at Havre submits an interesting report on the method adopted in various European cities of purifying the water-supply by the use of metallic iron. The water enters a hollow revolving cylinder charged with a certain quantity of metallic iron, according to size,—a purifier capable of treating 1,000,000 gallons of water in twenty-four hours requiring a charge of two tons or more. The iron may be in any convenient form, but that most commonly employed in practice are burs or punchings from plates. Cast-iron borings are very efficient, and, weight for weight, much cheaper. The charge of iron, in whatever form, is spread evenly along the bottom of the cylinder before commencing work. The water, on first entering the cylinder, strikes against a circular baffle plate, which directs the stream towards the shell and prevents it from passing through axially. As the cylinder rotates, curved shelves scoop up the charge of iron and shower it down through the water, thus causing a constant falling of the iron across the current of the water. Practically, it is a process by which the iron is filtered through the water. The outlet pipe terminates inside the cylinder in an inverted bell or hood, coming as low down as the shelves will permit. The object of this contrivance is to prevent any iron from being carried out of the cylinder by the current. The revolving purifiers are made in fourteen sizes, distinguished by the diameter of their outlet pipes, from 1 to 14 inches. In large installations, batteries of purifiers are employed, placed side by side, very frequently all discharging into a common outlet tank. Samples of the water submitted to this process have been found to yield only 40 microbes per cubic centimetre, and hourly samples yielded from 31 to 67 microbes per cubic centimetre. The original water, before filtration, contained from 20,000 to 100,000 microbes per cubic centimetre. In Boulogne, where the system is used, the cost of operation for a year was only 3010 francs, or $589.93. The process was first practically applied at Antwerp, where foul water, drawn from a source but little better than a sewer, was converted into a drinking water, bright, clean, and wholesome; and this explains why Antwerp has been so free from epidemics or cholera and other diseases within late years. This method has been successful in some of the most important cities of Holland, France, Turkey, and India, and has been recommended for improving the water-supply of Florence, Italy, by Sir Douglass Galton, the eminent English engineer and sanitarian.

It is evident that modern science will solve this "water question" by one form of filtration or another, and that every city or town in which the supply is now impure, can have the very serious defect almost entirely remedied. In this way a great danger to the public health will be removed.—*Buffalo Commercial.*

Age of Boat-Crew.

Omitting the coxswains, we find that at the time of death the eight Cambridge men reached the average age of sixty-nine years and twenty-six days, and the eight Oxford men sixty-nine years and two hundred and fifty-eight days, the average age of the sixteen being therefore sixty-nine years and one hundred and twenty-nine and one-half days. The average age of the Cambridge men on the day of the race (June 10, 1829) was twenty-one years and three hundred and thirty-three days, that of the Oxford men being twenty-one years and forty-two days.

The Cambridge men lived on an average forty-seven years and fifty-eight days after the race, the Oxford men forty-eight years and two hundred and sixteen days. The Cambridge coxswain died at the age of forty-three years and three hundred and eighteen days, he of Oxford (the late Dean Fremantle) at the age of eighty-seven years and one hundred and ninety days. The average of the Cambridge men on the day of the race is increased and their average length of life after the race is diminished by reason of one of the crew having been of the unusual age of nearly twenty-eight years.—*Notes and Queries.*

Alcoholism in Europe and its Relation to Insanity.

Darin states that alcoholism is increasing in Italy and Belgium, and especially in France, while it is decreasing in Norway, Switzerland, and Germany. Corresponding to this increase, the number of lunatics in France has also increased. The gain has been chiefly in the two types of insanity known as alcoholic mania and general paralysis. This relation between alcoholism and insanity is also shown by the statistics of different portions of the country, for in those districts whère alcoholism is most marked insanity is most common.

The hereditary effects of alcohol are not less striking, for, according to Legrain, among 814 children of alcoholic parents were 322 degenerates and 174 who had not sufficient vitality to live. Among the survivors are fourteen per cent. of hysterics and seventeen per cent. of epileptics.

General paresis has increased in Paris in proportion to a greater frequence of alcoholism.—*Thèse de la Faculté de Paris.*

An Infecting Disinfector.

A child suffering from a mild attack of scarlet fever was kept in-doors for forty days. The apartments were then disinfected under the auspices of the municipal authorities. Two days afterwards a spot was observed on one of the child's tonsils, and on investigation it was found to present a diphtheritic character. The medical attendant was convinced that the disinfectors conveyed the new disease, for no other strangers had been near the place, and he himself had not visited the house for three weeks. *Quis custodiet ipsos custodes ?* The foregoing case was communicated on June 18 last to the Société de Médecine Pratique in Paris by Dr. Roulin, the medical attendant, who further gave it as his firm opinion that disinfection by pulverization, which is the method adopted in the city of Paris, gives illusory results. Apparently the infection must have been introduced in the manner indicated, but it is not always safe to depend on *prima facie* evidence. The question is a very important one, and we trust it will meet with due attention.

THE ANNALS OF HYGIENE
PHILADELPHIA VOL. XII NO. 3

COMMUNICATIONS.

Education and Health.

(Especially addressed to Pupils.)

BY JOSEPH F. EDWARDS, A.M., M.D.,
Atlantic City, N. J.

I HAVE a sort of a notion that education does not, *of itself*, conduce to health and happiness. I have an idea that in the "dark ages," when all the learning of the world was confined to the monks, and the masses blindly and unquestioningly followed their advice in temporal as well as in spiritual matters, that the masses of the people were happier than they are to-day, when each individual unit of humanity is being educated into a thinking, reasoning, questioning, sceptical organism.

Whether right or wrong, this idea is not in accord with the spirit of the age, and I do not ask its acceptance.

When, after the "dark ages," the reaction set in, all educational thought was directed towards the training of the mind, with but little heed of the body. The folly and danger of this course will be readily understood when we remember that while we cannot see and touch and weigh the mind, yet it is, in reality, a *product of the body*.

Let me make this point clear by a familiar illustration: Electricity is doing wonderful things in these days: but what is electricity? You cannot see it, nor taste it, nor weigh nor measure it; it is a force, but an invisible, an intangible one. It is a force generated by the working of a machine, and if this machine be not kept in good order, the force cannot long be generated. If the sole thought of the engineer in charge of this machine is to get from it all the electrical force that he can *drive* it to generate, regardless of the wear and tear of the machine, he will succeed admirably well for a time, but the hour will surely come when the machine will prematurely break down and no more electricity will be made.

That which happens to the machine of iron will also happen to our human machine. Mind is an invisible force that is evolved from our bodies, and our bodies are made out of the food that we eat. If our educational processes are designed so as to develop all the mind that is possible, regardless of the welfare of the body, upon which the healthful development of the mind so largely depends, the results, for a time, will be brilliant, but before long the body will break down. *Mens sana in corpore sano* ("a sound mind in a sound body") has been so frequently quoted that I hesitate to introduce it, yet it tersely and fitly expresses what should be the true aim of education. That the mind may be developed in a healthful manner, it is absolutely essential that the body should be correspondingly cared for.

For my own child I would much prefer a "*healthy* ignoramus" to an "educated *invalid;*" but, fortunately, there is no necessity for either of these extremes.

What would you think of a railroad company that would take a man from the street, without any previous education, and put him into a locomotive to run it, telling him to put coal in the furnace and water in the boiler? He would make steam, and his own creation would blow him and everybody about him into eternity. The qualified engineer not only knows how to make steam, but he is also thoroughly familiar with every separate part of his locomotive, and the relation that these various parts bear the one to the other; he is capable of taking his engine apart, and putting it together again; in a word, he has *studied the anatomy of his machine.* But, even more than this, he knows the duty of each part, what work each part must do in the working of the whole; he has *studied the physiology of his machine.* Yet, still more, he knows how to use the different parts so that they will produce the best results with the least amount of wear and tear; he has *studied the hygiene of his machine.* The engineer, thus thoroughly equipped, will run his locomotive day after day, week after week, month after month, year after year, until it finally wears out of old age; while the man who only knew that fire and water make steam, and that steam produces motion, would have ruined this same locomotive in a very short time.

The boy or girl who eats and studies, realizing only that the mind is to be cultivated to the utmost, is like the man from the street who ruins his locomotive; the boy or girl who knows something about his or her body and its care, who realizes that care of the body will conduce to healthy development of the mind, is akin to the educated engineer.

Of course, the fundamental principles of education are laid down by the school authorities, just as the fundamental principles of a machine have been devised by others than those who run it; but the individual application of these principles is within the power of the pupil or the engineer.

Correct habits can be suggested by the teacher, but they must be cultivated by each individual pupil for himself; the teacher cannot cultivate them for you.

The teacher cannot breathe into *your* lungs; you must do that for yourself; and so is it with the actual application of all the rules of personal hygiene. Your teacher can tell you how to avoid sin, but you yourself must do the avoiding; so your teacher can tell you how to be healthy, but you yourself must *do* what you are told.

What is needed to-day is a higher development of the moral faculties, so that the rising generation will come to consider the possession of health as something to be proud of, and the presence of disease as something *to be ashamed of;* we are in need of an "aristocracy of health."

"Take care of your health," venerable ex-President Patton told the Princeton boys. "You may not need *binomial theorems*, but you will need your digestion every day. I wish that years ago I had thought more about my own health. A frequently recurring headache, a bad appetite, and sleeplessness are solemn warnings that you must heed. Dyspepsia is not a thing to be made fun of."

In this matter of hygiene, the children, who are being instructed therein in the school-room, must become the educators of their parents, and they must tell their parents that *schools are hot-beds of contagious diseases*, and that they will continue to be so in spite of every precaution on the part of the school authorities, and of all sanitary legislation, until the parents become alive to their duty in this matter.

I have had three epidemics of contagious disease in my own family,—one of measles, one of mumps, and one of whooping-cough,—and in each instance the disease was carried home from school by one of my children, just as surely as he carried home his books. Yet I do not blame the authorities of the school for allowing these diseases to come into my family; but I most emphatically do hold responsible the parents whose children, having these diseases, or having been exposed to them, have been allowed to attend school and give these diseases to my children.

Hitherto parents have not been informed on this subject, and they have sinned through ignorance. But, hereafter, if any parent who reads this article allows any child that has been exposed to contagious disease to go to school, such parent must feel that he or she has been guilty of a grievous sin in the sight of God and man, and any deaths that may occur from this neglect may be justly laid directly at the door of such parent. The school authorities cannot justly be held responsible, because there is no way by which they can tell that a child has been exposed to contagious disease, while some disease may be working in their bodies for days before it may become manifest; but, in the great majority of instances, any respectable parent will know that the child has been exposed.

Again, I can put a handful of corn into my pocket, sail out to Bombay, plant it in suitable soil, and it will grow; it did not grow in my pocket, because the conditions therein were not favorable to its growth; all the same, I was the means of conveying this corn from America to India. So, in like manner, a child whose body is not favorable for the development of a germ-disease may, if exposed thereto, convey the germs to some other child, who will take the disease, even though the child who has conveyed it may escape.

The duty of the parent is transparently clear, yet there are many parents whose moral obliquity is so great that nothing short of fine and imprisonment will open their eyes.

Suppose Mrs. Smith sends Johnny to school, knowing that it is his positive and unalterable determination to fight with Tommy Jones, and, possibly, to injure him for life, maybe, even to kill him; what would you think of Mrs. Smith?

You ought to think what I would think of Mrs. Brown, who allows Bobby to go to school when she knows that he has been exposed to some contagious disease, and that he will be very likely to give this disease to many of his school companions, and to *kill several of them*. And what would I think of Mrs. Brown? That she is utterly unfit to have the care of children, and that her utter lack of sense of duty to her neighbors makes her a dangerous woman to be at large.

What I have said about schools applies equally to any place where numbers of persons congregate. It would seem as though this might be taken for granted, were it not that the following conversation, recently overheard on the street, compels me to think otherwise:

Johnny.—"Ain't you going to school, Jim?"

Jimmie.—"No; we've got the scarlet fever at our house, and the doctor says I can't go to school: I'm going to the circus this afternoon."

In all contagious or germ-diseases there is a period of *incubation*,—that is to say, a time that elapses between the introduction of the germ and the manifestation of the disease; hence, after a child has been exposed to any contagious disease he should be kept from school until the incubation period of this particular disease has elapsed, because until then it cannot be said that he will not be a source of danger to others.

For *diphtheria*, the average period of incubation is two days; more rarely four days; and, occasionally, seven days. Infection of another may occur at any period of the disease, and the disease may be communicated by contaminated clothing for several months after exposure.

Measles.—The period of incubation in this disease varies from four to sixteen days. The danger of contagion exists during the whole course of the disease, but disappears very rapidly after convalescence.

Scarlet Fever.—The period of incubation is very short; rarely reaching six days; generally two days. The contagious elements persist a long time after recovery.

German Measles.—The incubation period of this disease is very variable, the average being about eighteen days. The contagion is most active just before the appearance of the eruption, and during its development. The contagious period continues for a short time after the eruption is fully developed.

Mumps.—The incubation period is the same as that for German measles. Contagion is greatest during the first three or four days.

Small-pox.—The average incubation period is twelve days; the minimum, nine days; the maximum, fifteen days. Contagion may occur at any period of the disease. Infection may occur through personal contact or through the clothing.

Chicken-pox.—The incubation period is fourteen to twenty days. It is less contagious than small-pox, and is most contagious during the period of eruption.

Typhoid Fever.—The average period of incubation is twelve or fourteen days; sometimes nine days; occasionally twenty-four days. Contagion may occur at any period of the disease, and even during two weeks after recovery.

Disinfection of Rooms after Contagious Diseases.

BY U. O. B. WINGATE, M.D.,
Milwaukee,
Secretary, Wisconsin State Board of Health; Professor of Hygiene and Diseases of the Nervous System, Wisconsin College of Physicians and Surgeons; Ex-Vice-President, American Medical Association; Member American Public Health Association, etc.

SINCE the acceptance of the germ theory of disease the word "disinfection" has taken on a somewhat different meaning from that which formerly existed. Before, it included the destruction of infectious matter and the removal of noxious odors; now, a disinfectant must not only mask bad odors, but must kill the germs that give rise to them, and may well mean a germicide.

To disinfect a room after the existence of contagious disease therein means practically to destroy all of the pathogenic germs and their products that may exist in the room and which may give rise to disease.

The following are the diseases termed "dangerous and contagious" in this State, requiring disinfection after their appearance,—viz., Asiatic cholera, small-pox, diphtheria (membranous croup), scarlet fever, typhoid fever, and tuberculosis. In other parts of the country there are other diseases which come into this classification, but do not exist in this State,—namely, yellow fever and typhus fever, and, in some foreign countries, bubonic plague. In some cities in this country measles and cerebro-spinal meningitis are included among those diseases which require disinfection; and the English authorities include erysipelas, relapsing fever, continued fever, and puerperal fever.

The disease-germs supposed to cause cholera, diphtheria, typhoid fever, and tuberculosis have been isolated. However, disinfection seems to be as efficacious in those diseases where the germ has not been isolated—namely, small-pox and scarlet fever—as in those where it has, which is strong evidence in favor of these diseases being of germ origin, although the germ has thus far escaped our investigations. For all sanitary purposes most authorities at the present time consider membranous croup as diphtheria, and continued fever as typhoid fever.

To disinfect a room in which has existed any of the aforesaid diseases, as soon as the patient has been removed by recovery or death, no time should be lost in carrying out the process of disinfection decided upon.

In the first place, all inexpensive articles of clothing, fabrics, or what not, which exist in the room, should be burned, as we know by this process we absolutely destroy all germs of disease.

In the second place, all washable fabrics should be plunged into boiling water for at least a quarter of an hour.

In the third place, all beds, mattresses, bolsters, pillows, carpets, rugs, stuffing of easy-chairs, etc., should be packed up, if possible, in rubber receptacles or bags, and removed to a disinfection station, where a thorough system of disinfection by steam can be conducted. These stations should exist in certain districts throughout the country, and in every city and large village. It is unnecessary for me to go into the details of a disinfection station, as information relative to this matter is in possession of all who have given any attention to the subject, and it is now a recognized fact that such stations and apparatus can be put into operation at a comparatively low cost in any city or village, and their method of operation is so simple that any one with ordinary intelligence can soon learn to operate them. It is utterly impossible to disinfect the aforesaid material satisfactorily by any other process known at the present time than by submitting it to live steam for from ten to fifteen minutes, which should come in contact with the entire portion of the article to be disinfected. Mattresses, pillows, bolsters, etc., should be opened before being submitted to the process.

In the fourth place, the floor in the room should be washed with a 1 to 1000 corrosive sublimate solution, care being taken to saturate the interspaces between the boards, and the walls should be sprayed in like manner by a garden syringe or similar apparatus. All crevices about the window-frames and sashes and doors should be thoroughly washed with this solution ; also the furniture in the room, after the upholstering has been removed, or that which is not provided with upholstering. The ceiling should be lime-washed, and special attention be paid to cornices and all ornamental work, that no part escape a thorough application. The walls which contain paper should be bared, the paper being removed and burned, after which the walls should be thoroughly whitewashed before being repapered. All picture-frames and other articles having gilt frames, also fenders, fire-irons, and metal-work generally, which cannot be washed by corrosive sublimate, should be covered by a 5-per-cent. carbolized vaseline and thoroughly wiped dry, or in many instances they may need only to be well polished. Of course, this does not apply to dishes, etc., of all descriptions, which can be boiled. The room should then be left with the windows open for a day or two, after which it is well to whitewash the ceiling and walls again and scrub the floor with soap and soda, which will convert any remaining sublimate into a non-volatile compound. A fresh coat of paint would be of further security.

It is to be borne in mind that pure air, and plenty of it, and sunlight are two of the most valuable germicides we have at the present time, and they are almost always available, and should be utilized in the process of disinfection in every way possible, and as long as possible.

I have no confidence in the use of sulphur burned in rooms as a disinfectant for general use, inasmuch as it is impossible to carry out the necessary details in order to have it effectual. No doubt it is efficacious in instances where three pounds of sulphur can be burned in a moist atmosphere containing a space of 1000 cubic feet, but the room must be absolutely sealed from the invasion of air, which is a very difficult thing to obtain, as a general rule, and is, in a majority of instances, impracticable.

We know that the bacilli of anthrax are exceedingly difficult to destroy, but Koch found that in an atmosphere containing 1 per cent. of SO_2 the bacilli died within one-half hour, but the spores resisted in an atmosphere containing 6 per cent. for days, although when spread on wet filtering paper they were killed in an atmosphere containing 5 per cent. in twenty-four hours. In some instances where no other means can be obtainable, sulphur fumes used as mentioned above may be advisable, but are not to be recommended.

We know that the bacilli of diphtheria, typhoid fever, and tuberculosis are comparatively easily destroyed where they can be fully exposed, and a great deal depends upon the care of the patient and room by removing from the latter needless furniture and carefully destroying all effete matters thrown off by the former; in preventing the dissemination of these germs in the atmosphere surrounding the patient; in rendering disinfection, after the patient has been removed from the room, easy; but it must not be considered that the atmosphere is the dangerous element as much as articles of furniture, floors, ceilings, and walls of rooms. Professor Willoughby, of London, correctly states that "aerial disinfection is a work of mediæval superstition, a delusion and a snare, satisfying ignorance and diverting the attention from really efficient methods of disinfection." In typhoid fever we have some problems to contend with not yet fully solved. It has been supposed that the entire danger of this disease was contained in the discharges from the alimentary canal, but recent observations have led us to suspect that the disease may be taken from the urine, the perspiration, and the respiration of the patient. This being the case, it is advisable not only to thoroughly disinfect the discharges from the alimentary canal, which can best be done by having them deposited in a 5-per-cent. solution of carbolic acid, or in the milk of lime, but also that the bedding, floor, and perhaps wall and ceiling, and the furniture of the room should be disinfected, as in other germ-diseases. This is a matter, however, not yet fully worked out.

Finally, it is well to remember that the most efficient agents in disinfection are the cheapest,—namely, corrosive sublimate, lime-wash, boiling water or steam, together with sunlight and pure air. It is very probable that experimental chemists may soon find other chemical agents of a germ-destroying character which will be more efficacious than any we now possess.

A SOUND body lies at the foundation of all that goes to make life a success. Exercise will help to give it.

Curl Papers.

BY JANE A. WRIGHT,

Bordentown, N. J.

THE days of the thumb-screw and the rack are past, and yet what countless numbers of innocents are tortured for want of thought.

Let me tell the tale of the rescue of one unhappy little victim of its mother's thoughtless vanity.

I stood in front of my door, one day last summer, buying berries of an old farmer whose wagon-load of crates was drawn up to the sidewalk.

He is a straightforward, outspoken sort of man, who knows everybody in the town, and I suspect has us each weighed and labelled.

"That's the crossest fellow I ever saw," said he, frowning at a little fellow of three or four summers who stood at a gate across the way. "He stands there and cries just for the fun of it. He's always crying when I go past this way."

I had a cross baby of my own in the years gone by, and the old man's impatient remarks seemed like a reflection on my own darling, so I hastened to the baby's defence.

"Yes, he does cry day and night. He seems to be very unhappy about something," I assented.

"But who of us grown ups wouldn't be cross if we had our hair pulled all day and were compelled to sleep on cobble-stones at night?"

"Why, what do you mean? They all seem to think everything of him."

"So they do; but I mean those wads his hair is done up in. Every little hair pulled and strained to its utmost and rolled up in those lumps. That is what he must endure the greater part of every day and all night.

"Humph! Sure enough. Women folks do dote on curls so. Why don't you tell them about it."

"I tell them! Why, I'm not sure that is the reason, and then I wouldn't dare."

"You wouldn't dare!" he repeated, in an odd sort of tone, and looked at me hard as if he would like to speak his mind, but thought better of it. Instead he gathered up his lines and drove off with a "Good day."

I went back to the side porch to keep company with my mending basket and my thoughts, the uppermost of which was that Farmer Talkit was very unreasonable to suggest that it was my duty to interfere with my neighbor's affairs because their baby cried.

In our small town there is no select neighborhood. Little houses and big mingle promiscuously, but the social lines are drawn tight. The grocery-man's family does not mix with that of the day laborer, and the family of the man who sells by the gross has no intercourse with tradespeople. Consequently, I had never become acquainted with the people across the street, they not being in my set at all. Therefore, how could I speak to them about the management of their baby's hair.

Besides, I reasoned, it may be only natural perversity after all that makes him cry so; and when all is said and done, is there any virtue that exceeds minding one's own business?

I had about persuaded myself into a serene state of mind again when I saw the farmer drive up in front of the little house across the way.

The grandfather sat on the curb-stone watching the baby play with a shovel in the sand of the road-side.

I almost stopped breathing when I heard the farmer say, "Tom Bell, what do you mean by keeping that baby's hair all tightened up the way you do?

"You know how a sand-burr takes a holt and pulls and creeps till it gets right in next the skin and then keeps on a pullin' and a stickin'. That baby cries and cries because his hair hurts him. Take him to the barber's, Tom, and let his mother amuse herself some other way besides torturing him."

The grandfather looked steadily down the road, and if he made any answer I did not hear it.

"That is all the thanks he gets for his trouble," thought I.

A few days afterwards, hearing excited tones in the street, I stepped to the door to see what unusual thing had happened.

The family across the way was all out front. The mother was wailing, "Oh! his beautiful curls!" the grandfather wore a guilty smile, and the baby, the halo of lumps gone from his head, pranced around on his short legs insisting "It feels dood."

I hear the mother has never become reconciled to the loss of those curls (?), but the baby's unaccountable crossness disappeared in a few days, and for the rest of the summer he was a busy, happy boy.

The Spread of the Bubonic Plague.[1]

BY JAMES CANTLIE, M.B., F.R C.S.,

Lecturer on Applied Anatomy, Charing Cross Hospital, London; late of Hong-Kong, China.

WITHOUT entering into the discussion as to whether or not all epidemics styled "plague" in biblical and mediæval literature were of the nature of the bubonic plague of recent times, there can be no doubt that since 1850 the name "plague" has been applied to a definite train of symptoms which are considered to constitute a specific disease. As we proceed, it will be seen how during different outbreaks some one symptom attains a fatal pre-eminence, but not to the exclusion of others which might at any time assume the death lead, and serve to baptize the disease as "bubonic," "hemorrhagic," "typhoidal," "pneumonic," and so-forth.

Name.—During the latter half of the century the names bestowed on plague have been as follows:

(1) In 1856, in Tripoli, it was known as "typhus with glandular swelling." When the disease reached the island of Chios, in the same year, it was called "petechial typhus, analogous to that of Tripoli."

(2) In Mesopotamia, where the disease was prevalent from 1856–85, and possibly up to the present day, the titles "adynamic typhoid fever" and "intermittent fever with glandular swelling" were usual.

(3) In Persia, where plague seems to be endemic since 1863, the term "hemorrhagic fever" is used to designate a pestilence which differs from the diseases with which the Persians are familiar.

(4) During the years 1877–79, the Russian province of Astrakhan was visited by a disease which was and is regarded as plague, but which was variously described as,—

---

[1] From the Medical Press and Circular, December 30, 1896, and January 6, 1897.

(*a*) Intermittent fever with buboes.

(*b*) Croupous pneumonia with buboes.

(*c*) Typhus with glandular swellings proving fatal by pneumonia.

(*d*) A peculiar form of mumps.

That all the above-mentioned outbreaks were actually plague, a specific disease, caused by a specific bacillus, will never be known; but the presumptive and clinical evidence is decidedly in favor of their being one and the same disease.

The name "plague," however, is not one which helps us to place the complaint in its proper scientific niche in the category of disease. The word conveys the idea of an unusual disease attacking many persons and attended by a high mortality, but that gives it no scientific value any more than the "wan-yik" of the Chinese. Were I to attempt to classify plague, I would place it among the specific fevers, and particularize it under the name of "polyadenitis," and individualize it still further as "malignant polyadenitis."

The term "bubonic," so frequently applied to the disease, is not so appropriate as would at first sight appear. A bubo is essentially the swelling of a gland caused by the entrance of septic materials in the tract of lymphatics over which the gland presides. This cannot be said to obtain in plague, for the so-called buboes of plague can in no sense be regarded as a sympathetic swelling, but merely the outcome of a blood poison.

Definition.—Plague, or malignant polyadenitis, we may define as *an acute febrile disease of an intensely fatal nature, characterized by inflammation of the lymphatic glands, marked cerebral and vascular disturbances, and by the presence of a specific bacillus.* It is only since 1894 that we have been able to set forth a definition with precision; it is only since then that we have acquired the knowledge of a definite bacillus by which the disease can be recognized scientifically when ordinary symptoms are in abeyance. In this definition no mention is made of hæmorrhage, pneumonia, petechiæ, or carbuncles.

Distribution.—At the present day, plague is confined to Asia; but since 1850 it has made its appearance in Europe, Asia, and Africa.

The basin of the Mediterranean and the strip of country which runs parallel to that sea across the Asian continent, from Turkey to China, may be roughly taken as its present belt during the nineteenth century, but the Mediterranean part of the belt has disappeared almost wholly within the present generation. A map of the plague-stricken districts within the last fifty years shows plague astride the Himalayas, with a giant limb reaching on one side the Red Sea, and on the other the shores of the Pacific.

THE CONTINUITY OF PLAGUE OUTBREAKS.

It would appear that in the plague belt the disease is ever active, now in one place, now in another. At times we find it in Arabia, then in Persia, and the Himalayas, and the wave travels eastward over Yunnan and Southern China to the sea. The disease oscillates, now east, now west, but with a fatal precision, making the slow swing of the pendulum of plague within a fairly definite area.

Cause of Plague.—The cause of plague is the advent of a definite bacillus, and it is the life-history of this bacillus which must in future occupy the attention of bacteriologists and clinical observers. The proximity of the bacillus is, at the present day, known only by its effect on human beings, and it may be rats as well. What fosters it appears to be bad sanitation; once established, time alone will stay its ravages so far as any given epidemic is concerned, but there seems every hope that improved sanitation will check its recurrences.

The *prodromata* of plague may be divided into the remote and the immediate; but I will consider them together. Time and again has it happened that before an outbreak of plague, during a period varying from a few months to several years, buboes with fever have been observed in a more or less epidemic form. In 1877 a variety of plague which infested Astrakhan previous to the outbreak that occurred in 1878, some 150 miles higher up the Volga, was classed as a *pestis minor.* No one died of the disease *per se*, and but few people were confined to bed. From Calcutta comes the news of the discovery of a bacillus allied in every respect to the Kitasato bacillus of true plague, and associated with the variety of plague known as *pestis minor*, which has convinced me that the two are identical. The bacillus is stated not to possess the toxic or virulent properties of the true plague bacillus, but to be similar in all other respects.

THE COMMUNICABILITY OF PLAGUE.

Infection and Contagion.—Direct contagion—that is, transference of the disease from the sick to the healthy by bodily contact—would appear at the first glance to be an element in the transmission of plague. How otherwise can we explain the circumstance that when a case of plague occurs in a house, those dwelling in the house and brought in contact with the sufferer are almost certain to be seized, and not only so, but few, if any, of the other inmates escape? The next in order to be seized by plague are the relatives of the sick and the visitors to the house, who, going to their own homes, set up a fresh focus of infection. Of the community, doctors, clergymen, and attendants who are brought in contact with the suffers more readily acquire the disease than others who are alien to the family and house. These facts would appear to prove conclusively the contagious nature of plague.

But there is another side to the argument. As long ago as 1835, when plague was epidemic in Egypt, out of *ten French doctors* who attended the sick, only one contracted the disease. Further, we have the well-known case of Bulard during the same outbreak, who, anxious to prove his contention that the contagious nature of plague was much exaggerated, for two days wore the shirt of a patient who had died of plague, yet Bulard did not contract the disease.

More recently we have the evidence of the Hong-Kong epidemic in 1894. None of the European doctors in attendance on the plague patients, in all some fifteen in number, were attacked by plague. Those men were freely exposed in the wards and at post-mortem examinations, yet none were infected. Further, none of the British- and Italian-born nurses—these were the only two nationalities represented—were attacked by plague during 1894.

But a more interesting fact still is that none of the Chinese students of the College of Medicine were attacked. For six weeks these men were on duty in turns night and day in the Plague Hospital. Eight of them acted as ward attendants and clerks throughout the period, and were consequently in constant contact with the sick. A racial immunity might be claimed for Europeans, but in face of this fact it cannot hold good. If there be any truth in the acquisition of disease during an epidemic by fear or nervousness, the case of these students refutes the aspersion. They saw that the Europeans escaped, and how terribly their countrymen suffered; they had to contend with the superstitious beliefs of their country, inherited and acquired; they were breathing the same air, eating similar food, hearing daily, hourly even, of the deaths of their friends, relations, and acquaintances; yet none of them succumbed to plague. We have, therefore, two opposite conditions before us,—namely, plague entering a house and seizing practically all the inmates; and, on the other hand, doctors, nurses, and native students, acting as medical clerks and dressers, escaping completely. Where then lies the truth of the contagious nature of plague?

As usual, there is a channel of escape from either of these two extremes of argument. The immunity above related does not extend indefinitely. The Europeans attacked during the 1894 epidemic were chiefly soldiers of the Shropshire Regiment, then stationed in Hong-Kong. When plague required sanitary interference beyond the power of the local board, these soldiers came forward and volunteered to help in the work of cleansing and purifying the city. The work assigned to them was of the most laborious order, and they were exposed to a concentration of the contagion, for the field of their duty lay among the dwellings of the poorest class of Chinese who were suffering from plague. Those houses were of the vilest kind of habitation mankind is acquainted with; small, windowless, low-ceilinged, reeking with filth and excretions, they presented infection in the most concentrated form. Further, the soldiers had to use spade and shovel to dig down into the accumulated layers of dirt on the floors of the houses and throw it into the street. It was this occupation, this raising of the dust, more than any other to which is attributed the infection of the soldiers.

The evidence of the subsequent outbreak in Hong-Kong in 1896 goes to show that Europeans were much more frequently attacked than in 1894, and two of the nurses in attendance on the sick contracted plague. One of the nurses was a British-born nursing Sister at the Plague Hospital, where she had been for many months. She never was ill until the very end of the epidemic, when she got a sharp attack of the plague, from which, however, she fortunately recovered. The Sister believes she was infected by a little child she nursed, and whom she frequently carried about in her arms. The other European nurse was an Italian-born nurse in the convent, who believed she was also infected by carrying about a child sick from plague. The Italian Sister died of the disease. It is interesting to note that the patient from whom the English Sister contracted the disease recovered, whereas the patient of the Italian Sister died. Another Sister in the convent died, presumably infected while nursing her companion. These three deaths seem to point to a contagion rather than infection as the means of spread, for, although there were some 600 persons in the convent, none of the other inmates were affected.

Gathering this evidence together and trying to focus it, we found that the soldiers who were affected were exposed, if there is any truth in intensity of contagion at all, to the most concentrated form of the poison. They worked, not in the streets in the open air, but in reeking hovels for several hours together. Intimate and prolonged contact with the contagion in an active condition seems to be the explanation of their *infection*.

The same is to be said of the two European nurses who were seized. Both attributed their ailment to intimate and prolonged *contact* with a generating source,—viz., a child carried in the arms, not for a few minutes, but for several hours daily, extending over several days.

That there are, however, degrees of power in the contagium even when emanating from the human body seems to be supported by the nurse and infecting child both recovering in the one instance, and the nurse and infecting child both dying in another. Bulard sleeping in the dead man's shirt proves nothing further than that the plague-infected garment did not *generate* poison of an intensity sufficient to infect. The poison grew every moment more dilute, but a nurse carrying a child throwing off contagium continuously is an exposure of a different stamp.

The immunity of the doctors and Chinese students does not annul the effect of prolonged and intimate contact as being a means of spread; for it must be remembered the doctor *visits* only; he does not stay for a day beside one case as a relative does, nor does he sleep or eat under the same roof as does a nurse. In this way also the immunity of the Chinese students is to be accounted for. They performed their task in a newly-built, commodious, and roomy mat-shed, freely ventilated by being raised three feet from the ground, and its lofty roof constructed so that air swept across between the side walls and the roof, with large apertures in the roof itself, the chance of contracting the disease from so diluted a form was reduced to a minimum.

The practical lesson to be learnt from these statements is that free ventilation and attention to hygienic rules lessen the chance of contracting the disease to a very great extent, not only for Europeans, but also for natives; but that all are liable to contract the disease when, either from the calls of duty or wilful neglect, exposure is extreme.

What has been termed the "miasmatic" method of infection bears distinctly upon the maintenance and epidemicity of plague. Miasmatic infection implies a soil-bred disease; a disease existing as we assume malaria does in the earth itself, in the water, or in some particular form of fermenting or decomposing material in which the germ finds a nidus. In a neighborhood so infected, the disease is endemic, as manifested by the fact that again and again the disease recurs; that after a few months of seemingly complete disappearance the disease crops up and runs a more or less severe course.

Rats.—Rats are known to be infected and die of the disease. Moreover, they are a great source of infection indirectly to man by infecting the water-supply.

Snakes.—Dr. Thomson remarks, in the *British Medical Journal*, September 8, 1895, page 560, "Moreover, when rats are thus dying, dead snakes also are said to be found about the site in unusual numbers." Later on he remarks, "The snakes eat the rats."

Dogs.—Dr. Mouchard, in the *Chinese Customs' Medical Gazette*, in the forty-seventh and forty-eighth issues, remarks that dogs died during an epidemic of plague. He ascribes it to the dogs eating the flesh of human beings or any other animal dead of plague.

Pigs.—It is even more important to ascertain whether or no the pig is infected. Pork is largely consumed by Chinese; and, moreover, Europeans in the East seldom or never eat Chinese-fed pork. The Chinese died of plague whilst the Europeans enjoyed an immunity from the disease; nothing seems more conclusive than that pork was the infecting food. Moreover, most of the pork brought to the Hong-Kong market comes from Pakhoi, a town where plague has been endemic for years.

The first point to be settled is, Does the pig suffer? *Not as a rule.* The pigs from Pakhoi showed no falling off in numbers, and they were not sickly; the former condition would have obtained had plague thinned their numbers in Pakhoi, and the latter would have been found out when they reached Hong-Kong, where careful inspection of all food-supplies is made.

Dr. Mouchard writes, "We saw on some roads dogs and pigs feeding undisturbed on corpses which no one cared to bury. These animals fell victims to their greed and succumbed to the scourge."

Further, plague has been produced in the pig experimentally, all of which goes to prove that pigs die of plague after consumption of corpses dead from plague and inoculation; but that pigs are not primarily liable to plague in the same way as rats and pigeons seems conclusively shown.

It will be seen at once that the infection of birds would render the possibility of the rapid spread of contagion and the appearance of the plague in isolated districts easily explicable. It is not comfortable news that we may have a winged distribution of plague.

To sum up our knowledge we find,—

(1) That the rat is the animal most liable to be attacked.

(2) That rats suffering from or dead of plague may infect other animals which consume them.

(3) That rats are always affected by a disease similar to plague at the same time that man suffers.

INCUBATION.

The time intervening between exposure to and the development of plague is three to six days as the period of incubation, but the evidence within the last few weeks from Calcutta renders the period of incubation of ambulatory plague uncertain.

Invasion.—The onset of the disease in malignant polyadenitis is known to be usually sudden and severe. The patient is seized with headache, fever, and prostration, and compelled straightway to seek his bed. In a few hours or a few days a swollen gland develops, and the disease runs its course. But we have on record many cases where high fever existed and the patient did not even feel ill; or where a gland swelled up with no general feverish state. Such cases are sufficient to show that fever or plague may exist and the patient not be aware of it; and the glands may be affected for a fortnight before the disease declares itself in the usual way, by headache, fever, and prostration.

The onset of the disease, therefore, even during a plague epidemic, may not be so definite as we should like to believe, and as yet we have no charts recording the condition of the patient between the time of exposure and the invasion.

The Bacillus.—The bacteriology of plague began by the advent of Kitasato from Tokio during the Hong-Kong epidemic of 1894. On June 14, 1894, Kitasato demonstrated the bacillus, which was confirmed afterwards by Dr. Yersin, of the Pasteur Institute, in Saigon, working in an independent manner. The bacillus has been variously described as (1) a diplococcus; (2) diplococcus enclosed in a delicate capsule; (3) a short bacillus with the ends somewhat rounded and a clear space or band in the centre. Professor Woodhead writes, "The size varies considerably according to the staining method employed, the organism appearing rather smaller in the watery gentian-violet solution than in the glycerin-fuchsin solution. It is plain that the size of the capsule and its staining capacity vary very considerably; and it is quite possible that this appearance of a capsule is like that which is sometimes met with around the bacillus of anthrax stained in special solutions in that it may be simply a refraction from the albumin from the constricted bacillus, due to the drying and other processes of preparation." In the figures drawn by Woodhead an organism was met with in some specimens which seems to indicate a development after death. The last statement may be the most important of all, and its confirmation will be anxiously looked for during the present outbreak in India. It may be the first step towards a knowledge of the life-history of the bacillus in the same manner as the flagella of the *plasmodium malariæ* are found to develop in the field of the microscope some half-hour after removal from the body.

The Municipal Control of the Consumptive.[1]

BY THOMAS C. CRAIG, M.D.,

Passed Assistant Surgeon, United States Navy.

Mr. President and Gentlemen of the National Sanitary Association,—All sanitarians are naturally interested in the preservation of health by the prevention of disease; and I have no doubt that your association will do much at this annual gathering which will go far towards educating our people as to the rules and means to put into practice whereby the spread of many of our infectious diseases may be limited.

---

[1] Read before the National Sanitary Association, Brooklyn, N. Y., October 14, 1896. From the Medical Record.

One of the most prevalent and wide-spread diseases with which we have to deal is consumption, and it is to the municipal control of this disease that I wish to invite your attention for a short time.

Much has been written and proposed on this subject, but as yet nothing definite has been done. The municipal control of the consumptive is such a radical and far-reaching safe-guard for the public welfare that the great wonder is that it has not long ago been put into practice. In and around the city of Brooklyn the annual mortality from tuberculosis is about 14 per cent. of the total number of deaths. This large percentage is not alone confined to this area, but prevails with equal degree in many other places. The geographical distribution of this disease is greater than that of any other. Wherever you find civilization you will find cases of consumption; in the homes of the rich and in the homes of the poor, from the Arctic to the Antarctic, from the east to the west, everywhere this dread and persistent disease is present. No cure has yet been found for it; merely alleviation for those who have to endure the suffering, and then die.

This disease has been allowed to flourish in our midst unchecked and to claim its victims by the thousands annually, without there seeming to be anything done to limit its ravages or to call a halt in its relentless advance. Sanitarians, doctors, lawmakers, citizens, and officials everywhere sit idly by and make no effort to enact laws and regulations for the control of this infectious disease. Consumption is commonly regarded as one of the diseases that we must live with, and if by chance one contracts it then it must be endured by him, while others run their own risks of becoming infected. Whole families have thus been carried off by one of their number having contracted this disease and in turn infecting all the remaining ones.

Municipal control very quickly asserts itself should a case of leprosy happen to be discovered in any of our cities; yet when it is known that leprosy is far less infectious than tuberculosis, and that leprosy is not nearly so quickly fatal, the great wonder is that we have neglected for so long the more infectious of these two very similar diseases. Recently the view has been advanced by an able English writer that tuberculosis and leprosy are more nearly akin to one another than any other two diseases; indeed, the theory has been advocated that they are twin-sister diseases, several writers even going to the extreme of saying that they are identical, merely differing in their local manifestations by the different tissues invaded.

Attention is called to their resemblance: (1) in their specific causation and in their morphology; (2) in their pathology; (3) in their distribution; (4) in their general history and the conditions favorable or otherwise to their existence; and (5) in their infectiousness.[1] This writer goes on to show that the same sanitary surroundings which tend to the promotion of one of these diseases will, in like manner, aid in the causation of the other one; that the same sanitary and climatic conditions go hand-in-hand to the production of effects which will aid these diseases to assert themselves. It is not my purpose to prove that these two diseases are similar or dissimilar, but to draw the parallel of comparison as to how eager we are to take control of the leprous subject, when at the same time the tuberculous patient is allowed to roam at will. If municipal control of the leprous subject is for the safe-guarding of the health of the community, why then do we not make the health of the public yet more secure and safe from infection by taking under control the cases of tuberculosis? In answer to this I may say that it is because the breaking of family ties, the removal or restraining of those we love, and the taking away of friends would lead to sorrow and grief. Yet these things are disregarded in the case of the leprous patient.

I am not yet prepared to advocate the forcible removal and control of all persons affected with consumption by the municipal authorities, and the placing of them in suitable sanatoria, so that the dangers of infection would be lessened, but this would be the plan by which the remainder of the community would be rendered safest from infection. To all this the public will have to be gradually educated and enlightened, and until that result is attained other kinds of municipal control might be used. That the proper control by the municipal health officer would decrease the number of cases of tuberculosis there can be no doubt. That our people can be gradually taught these things there can also be no doubt, but until this can be accomplished the common ordinary rules of sanitation and control which are now exercised in many of our cases of infectious diseases can be brought to bear on this class of patients.

That tuberculosis is a highly infectious disease, and that it annually causes more deaths than any one other disease, no one will dare to deny. The infectious nature of this disease had been known for a long time, but it was not until 1882 that it was definitely ascertained to be due to a specific organism.

---

[1] London Lancet, July 11, 1896.

Experimentation has since shown how very easy it is to induce this disease in some of the lower animals If a small particle of tuberculous sputum be inserted beneath the skin of the guinea-pig, the tuberculous process can with certainty be established in about three weeks. Of course, this particular animal is very susceptible to this particular disease, being much more so than human beings; and this now brings up the question as to who are susceptible and who are non-susceptible to tuberculosis. Why are some persons immune while others are non-immune?

When it is remembered that most all known diseases depend for their development on the weakened resistive power of our body cells, or, in other words, on the power of our body cells to battle against the attacking power of the bacteria which cause disease, it is easy to arrive at the comparative fact that whatever lowers our resistive power will aid our enemy, the bacteria. It is the food we eat, the air we breathe, and the clothing we wear which enable our body cells to maintain their tone or strength. When these things are in improper proportion or are of poor quality, then our body cells suffer; they become weak, are unable to resist the attacking power of the disease-producing bacteria, and as a result we are liable to contract some one of the diseases.

It goes without saying that the more wide-spread any certain disease-producing bacteria are, the more cases of that disease there will be, provided, of course, there are plenty of non-immune subjects present and they are exposed to these infecting bacteria.

In this one disease,—viz., tuberculosis, over which it is urged there should be municipal control, I am certain that the number of cases could be greatly lessened annually. The number of areas of infection could be reduced, good food could be supplied, proper ventilation could be instituted, and to the poor clothing furnished. Municipal control of the consumptive need not mean the same control as is exercised over a prisoner. At first it might be merely a control over his place of residence; as, for example, where there might be a consumptive patient who was compelled by personal or by financial reasons to eat, live, and sleep in the same room with healthy persons; or where it might be impossible for him to give up his employment and necessary for him to go to and from his place of business in public conveyances, or necessary for him to meet many persons daily in the conduct of his business. It is in these places and at these times that the consumptive cannot, by force of circumstances, or is not, by force of habit, over-particular as to whom he may or does infect with the disease he himself suffers from. The expectoration of a consumptive person contains millions of the tubercle bacilli, and in his going to and coming from his place of business this sputum is deposited on the street or on the matting and upholstery in cars and carriages, on table napkins and towels, both at home and in public eating-houses, there to be dried and then blown about as dust and inhaled by others. Ladies with their long trailing dresses unconsciously sweep up this tuberculous sputum on our streets, and it is carried home into their houses, there to dry into dust and possibly infect some member of the household. It is largely to ignorance of these facts that we owe many of the cases of consumption. Probably no more dangerous sources of infection exist in our towns and cities than the street-cars with their mats and matting. These things form excellent and handy places for the consumptive to deposit his expectoration. It sinks into them, dries into dust, and in a short time is ready to be inhaled by some one who possibly has had his resistive power lowered by sickness, or by exposure, or by want of food, or by overwork; and the result is, in many cases, infection.

No child was ever born with consumption, but yet it is true that annually many children die of this disease. How, then, do they contract it? I answer that they are infected by tuberculous mothers, or by tuberculous nurses, or by coming in contact with tuberculous persons, or by inhaling germ-laden dust.

The question as to whether a tuberculous mother should be allowed to nurse a healthy child may in the future come up for the municipal health authorities to decide, as may also the advisability of allowing consumptive persons to use public conveyances.

The question of the sanitary regulation of the cleanliness and the healthfulness of our public conveyances may yet be placed under the control of the proper municipal officer, and we will not be confronted with notices such as "Gentlemen are requested not to spit in this car;" but we will see in its place the following: "Any one who spits in this car will be arrested and prosecuted." By the municipal control of the consumptive many of these dangers could be avoided. The municipal health officer would then demand that all cases of consumption be reported to him. He would then send an experienced assistant to the place where the case existed. This assistant would satisfy himself as to the condition and sanitary surroundings of the consumptive subject, and also as to the general understanding the patient had concerning the danger of infecting others; he would also take note of the number of persons living in the house, the general sanitary conditions, and of the health of these persons, and then report these facts to his chief. Measures could then be taken to confine the disease within the smallest possible area so as to run the least possible chance of infecting others. The houses or rooms which were occupied by consumptive persons could be reoccupied or allowed to be rented for occupancy only after having been thoroughly disinfected, and this disinfection, too, could be carried out under the supervision of a competent and conscientious person. All furniture, bedding, clothing, carpets, rugs, etc., which were used by a consumptive person, could be properly disinfected.

The control of the sanitary condition and the compulsory disinfection of our street-cars and public conveyances should be brought under the authority of the municipal health officer by the enactment of proper laws for the preservation of the public health. Very few persons have any idea what a large factor in the causation of consumption by infection the dirty, dusty street-cars and public conveyances are. Within the past couple of years inoculation experiments made, both in this country and in Europe with the dust and sweepings from these vehicles, showed the presence of the tubercle bacillus in a large proportion of the cases.

Have you ever thought about what travelling areas of infection our richly-upholstered sleeping-cars are which run to and from our health resorts for consumptives? Imagine a consumptive person riding for a day or two in one of these cars, staining the floor, carpets, and the upholstered seats with his tubercle-laden sputum, and then unknowingly this same compartment soon occupied by a weakened, delicate person, who unconsciously might inhale some of these tubercle bacilli and thus become infected by the disease.

Cases like this could be multiplied, as, for example, in the berths on steamers, the bedrooms in hotels, etc. It is just in these kind of places of infection that the authority of the municipal health officer should come in for the control of the sanitary condition of these means of travel.

The guarding of the public health is what we charge the municipal health officer with, yet we fail to enact the necessary legislation by which he can accomplish this end. The cities of New York and Brooklyn have within the past few years made an attempt to locate their cases of consumption, and also to point out, by very excellent circulars, the dangers of infection by the consumptive, and how to guard against them. But necessarily they leave it optional with the physician to report these cases or not to report them.

These circulars are requestive. The health boards of these cities also offer to disinfect all furniture, carpets, rugs, clothing, rooms, etc., free of cost, if the persons will only come forward and agree to it. But all this is futile for good as yet. The reporting of a tuberculous case should be mandatory, and for the neglect to do this a heavy fine should be imposed.

No excuse should be taken that the physician is unable to diagnose with certainty a case of tuberculosis. The microscope furnishes a ready and positive means of ascertaining whether or not a sputum contains tubercle bacilli.

When the municipal control of the consumptive patient is given to the health officer, then it will be that the number of cases of that disease will begin to decrease. The municipal health officer can then make the proper regulations for governing the going and coming of the consumptive ; the friends and relatives will readily consent to any humane and wisely-directed rules when they know that these same rules are merely intended for the safety of themselves and others. Living-apartments, furniture, and clothing will then be rendered free from infection ; street-car companies, owners of public conveyances, and railroad corporations will then have to disinfect their cars and vehicles thoroughly as often as it may be necessary.

I am convinced that this municipal control of tuberculosis should also extend to the milk- and meat-supply. Tuberculous cows and cattle intended for meat should be rigidly excluded from our markets.

Systematic and regular inspections of all of our dairy farms and of our meat-supply should be carried out by our municipal health officers, and all means should be taken to exclude these sources of infection.

The general public may at some future time be educated up to the necessity for all these things, and the result will be fewer cases of consumption, less danger of infection to the public, less suffering, longer life, and in the end more prosperity.

Every one will then agree that the prevention of disease is better than the cure.

Excessive Physical Exercise as Cause of Nervous Exhaustion.[1]

BY S. G. WEBBER, M.D.,

Boston.

IT is necessary to understand at the very beginning that the term "excessive" is relative and does not—indeed, cannot—mean the same for each person. That amount of exercise which can be borne by one person would be far in excess of the strength of another, and could not be endured. An Indian scout or runner could cover a distance far beyond the ability of an ordinary person; and most people can walk farther than one of my patients, who found himself so exhausted by a walk of five miles that he had to ride home.

My object is to call attention to what I believe is a source of danger at the present time, when athletics are so popular. For many, a moderate amount of exercise is as much as the pupil or patient can take with safety. Hence the need of physical examinations in every doubtful case before entering upon a course of gymnastics. The family physician should have a care in this respect over the children, and guard the weaker from harming themselves by following the fashionable tendency; for it is not merely in gymnasia that the harm is done. Fortunately, in nearly all such institutions there is now at least a nominal recognition of the fact that a young man may overtax himself; and in many there is a doctor who is supposed to have an oversight of the young men or women who attend to exercise. Yet a physician may not recognize in a hasty examination the inherent weakness which is well known to the family physician.

As now the various sports and games are in greater favor than at any time for many years past, there is need of care as to the amount of training the young receive or try to get outside the gymnasia. The fashion and rage for athletic sports, and the desire to train the body, to bring it into the highest state of discipline and under the most perfect control, is more general now: all the young men and boys—and girls, as to that—are striving to make the most of themselves physically. Base-ball, foot-ball, golf, rowing, tennis, bicycling, and for the less hardy, croquet, with other out-door games are drawing our young people into the open air as never before in the memory of this generation. The contests for which the participants prepare by a long course of training, and which attract crowds of interested spectators, have increased an hundred-fold within my memory.

---

[1] From the Boston Medical and Surgical Journal.

The influence of this tendency is felt everywhere by both sexes, by old and young. Gradually the spirit of rivalry has extended, and now the programme in athletics is nearly as long as that of former collegiate studies. There has arisen among young people a strong tendency to overdo in this direction. More good than harm comes from this popularizing of athletics. The community is gaining in that our youths are acquiring health and endurance which enables them the better to take their part in life. Now boys and young men can get in the field of sport training for muscle and eye, for brain and nerve and judgment, which formerly it was difficult to find.

There is a class of students who go into athletic training with a serious purpose, with the desire to make it an added means to the end they have in view. They have no intention of engaging in any contest of strength or skill; they recognize that they are not able to compete with their more robust fellows; but they desire to prepare themselves for more vigorous work in the study, that they may attain the best results in the class-room.

The glamour of athletic contest is thrown over them in the preparatory school and in early college life, and they come to believe that the stronger they can make their bodies, the more muscle they can develop, the more severely can they tax their brain, and the more their mental powers will develop.

Many below the average in physical stamina, who need to husband their strength carefully, begin too early to seek greater muscular power, not knowing that if they spend in the gymnasium four-fifths of their strength, they cannot use three-fifths in study.

To a certain point it is true that training the body will give vigor to the mind; but there is a limit beyond which one cannot go without the mental power, and later the physical suffering. The limit varies with each individual. And there is a limit as to the character of the training, the nature of the exercise, and also a limit as to the amount of time which should be spent in the training. It would be unwise for a boy with naturally weak legs to try at first to walk or run as far and as fast as one who was unusually robust and strong in his legs. Let him begin with light leg-work, and by graduated exercise develop the muscular power, and he will be able to do a fair amount of walking, but never attain to the greater power. If he in this and other respects cultivates immoderately the moderate power he possesses, he will do himself harm, and at length will find that he cannot use his brain in study to the best advantage. But if he will be satisfied to train his body according to the natural capacity of that body, the brain will not fail him. He may be honorable among the thirty, but cannot attain to the first three.

The fashion is now, and has been for some years, so set towards athletic sports that there is danger lest young men and boys who need to be moderate and careful in exercise should plunge into it too vigorously and suffer harm. Public sentiment is strongly in favor of a healthy mind in a healthy body, and no one raises a warning voice to restrain the young man ; or if they do, the protest is too often feeble or neglected. This is true of all forms of gymnastic work. Military drill is useful to a large majority of boys, but occasionally there is one who ought not to be subjected to it. The very marked cases, where it would be injurious, are recognized and escape, but there are many doubtful cases, where, unless such boys are carefully examined, they may suffer from the training.

It is well to keep in mind that many boys and girls, young men and maidens, need medical advice as to the amount and quality of gymnastic training which will be of greatest service to them.

No gymnastics which overtax and strain the growing youth in muscle or joints, wherein the difference in natural strength and development of individuals are not taken into account, are safe. The progress should be gradual, from light to severe, to more severe exercise until each has reached the limit of his normal capacity, and is in condition to do the best work in all departments of life. For the majority of young men and women this is far below the training needed for an intercollegiate contest of any kind.

My plea is for the family physician to study the physical and mental idiosyncrasies of his youths, not patients perhaps, and give unsought warning, if necessary, lest they run into some of the mistakes made by some of my patients, remembering that in many persons both brain and body cannot be trained to the highest efficiency. There are a few brawny blacksmiths who have a mental power proportional to their biceps, but the rule is otherwise.

The report of a few cases illustrating what I have said will help to impress the truth of the statements made, and will show that there is some danger in the direction indicated.

Mr. H. H., aged 21 years, had been fairly well most of his life; had typhoid fever a little more than a year before I saw him. The day before he had the fever he hit his head playing foot-ball; the next day he had a severe headache, and two days later the fever. About seventeen days later he went home; and three days after, he had fever again, and was in bed five weeks. He was out of college two months and a half.

A few years before coming to college he had worked hard, and for three years had had a tremendous strain. Before the above illness he had been well, and after making up his lost time he was well. He came back in September feeling well, but about Thanksgiving time he felt dragged. After attending a foot-ball game, not playing, he felt tired; rested, and felt well till the week before Christmas. For nearly a month he worked and rested alternately, as he felt more or less tired.

He had eight hours a day college work, exercised fifty minutes in the gymnasium, and took a gentle run afterwards. He ate well, eating a large amount of meat. He slept about eight hours and a half.

His life was regulated. He was advised to take less exercise, to be regular in his hours of study and meals, to omit some of the work he was doing. The last of May he felt well. He got through his examinations without trouble, having some headache, but not severe. He returned to college after the vacation in pretty fair condition, but somewhat tired with the sports and gayeties of the summer. He was inclined to eat rather too much meat; but he had cut down his outside work and the amount of exercise he took. He got through without further serious trouble.

The most important part of the treatment in this case was cutting down the exercise to fifteen or twenty minutes a day of less severe kind of exercise than was used at first.

This young man had practised gymnastics alone in the gymnasium. Gymnastics alone, without the association of a class, is more of a strain, less of a mental recreation, than if taken in a class. Alone, the whole time is given more fully to work, with fewer or no intermissions, and there is less variety of mental recreation.

The best results can be obtained for the average youth in class-work with music. There is the exhilaration due to many taking part in the same exercises, in addition to that caused by the music. The fun and amusement turn the work and exercise into a recreation. Also in class-work there is necessarily waiting one for the other, giving short periods of rest, so the gymnastics can be continued longer. In solitary work, if necessary, there should be short pauses for rest, and the time devoted to exercise should be less than in class-work. I am not now speaking of those who need gymnastics as a remedial measure to overcome definite diseased conditions, but of those who, being in normal health, desire to increase general muscular strength and physical vigor.

Mr. M. G., aged 21 years, came to me early in 1893. He was a student. He had been ailing three or four days. He had been in another college and had broken down, doing work outside his regular college work. He then rested a year and a half. At the beginning of that breakdown he had vertigo, and could not fix his mind on any subject. He entered the Sophomore Class. Two days before he came to me, he felt faint while studying; this was followed by a headache the next day, and when he came to me he had difficulty in following lectures. He complained chiefly of headache and backache; had to give up his work for about an hour. He took a sleigh-ride and felt better. When I saw him he simply could not apply his mind. He had been taking too much physical exercise, though I did not make note of how much. By moderating his work and regulating his mode of life, he succeeded in doing fairly well.

Another patient was always rather weakly and could not play like other children. When he first began to break down he felt an excessive languor. He used to take long walks to keep up his strength, often farther than his strength would warrant, and had to return home in the cars. He was finally obliged to give up study, as his mind would not work. The physical exercise was only one of the causes for this young man's running down, and probably not the chief cause.

Another patient, Mr. A., gave much attention to gymnastics in college, and played ball. He was obliged to intermit his college course, practised at the Butler health-lift, gained, and then finished college. He was always delicate and nervous, had many symptoms referable to the digestive tract, and suffered from headaches; he did fairly well for several years if he did not have too much physical strain in addition to mental. I cannot give the particulars of a long period of slowly-increasing nervous exhaustion, but mention the case, as the extra physical tax in the gymnasium and in playing ball seemed to hasten a nervous collapse, which perhaps could not have been entirely prevented without a complete change in the plans of his life-work.

Another young man, J. G. M., aged 22 years, while in school, at about 19 years of age, danced much and drilled much, being ambitious to excel in the military drill. He also played and ran in his play very much. When he left school he went into a business in which it was necessary for him to climb many stairs. The last year in school he found his mental power was not so good as it had been previously; he had to read his lessons over more frequently to understand them; it was harder to learn. After going into business and taxing his legs more, he had numbness in his legs, backache across the lower lumbar region; at times he had hot sensations, and again cold chills running down his back and legs. He was beginning to have trouble in walking on level ground.

This case is one in which there was more physical exhaustion than mental; yet the mental tire was well developed in the last year at school, and had he continued to study, no doubt it would have become still more marked.

Miss W. was a vigorous, active girl, engaged in all sorts of out-door plays and sports; was very strong, and able to do more than most of her companions, but was of delicate, nervous constitution, and did not inherit nervous vigor. She rather took pride in her good physical condition. Being much interested in the violin, she studied that instrument, practising four or five hours a day. After five years of this she broke down rather suddenly. There was excessive physical strain in addition to mental fatigue and excitement. The principal symptoms were in the legs, numbness and inability to stand, pain and tenderness in the back and head, headache and inability to concentrate her mind.

What shall we say of young children taking long walks? children 8 to 12 years of age walking twelve miles on a stretch? A lady recovering from a sickness, played croquet so long that she was exhausted and her full recovery delayed. These are only examples of cases wherein exercise has been pushed beyond safe limits from a mistaken idea that thereby greater strength would be gained,—not from necessity and the need of unusual exertion in life's necessary work. In each case illness and weakness were caused or hastened by the means taken to prevent their occurrence.

There are some whom we need to warn against overtaxing themselves in the very laudible design of making the most of themselves in every respect.

NOTE.—Since writing the above I have seen a young man, 18 years old, who rode on a bicycle over 200 miles in two days. For several days he was very tired. Some weeks later he gave out mentally and physically, not having entirely recovered from the exhaustion caused by the ride.

Sociologic Reforms.[1]

BY ARTHUR R. REYNOLDS, M.D.,

President of the Board of State Commissioners of Public Charities of Illinois.

THE Board of State Commissioners of Public Charities were moved to call this conference, feeling that there was a growing demand for knowledge of our institutions, and an increasing interest in the care of dependent persons. There seems, also, to be an awakening among charitably inclined people, as to how best to help those who cannot help themselves. It is true that our board publishes every two years a report of their doings, so also do the larger institutions, but they are read by comparatively few persons.

The amount of money paid out directly by the State to support persons unfitted by nature or disease to support themselves is very large, but when we come to consider the amount expended by the several counties and municipalities, and the sums subscribed, through churches and other public bodies of organized charity, together with the amount expended in private work of the same kind, the total amounts to enormous figures.

---

[1] From the Journal of the American Medical Association.

It is to the credit of the tax-payers that there is never any complaint against paying a liberal allowance for the care of the sick and needy, and however heavy the total burden of taxes may be, there is no one that would have it lightened, if the retrenchment would bear upon the scanty portion of the poor.

Notwithstanding all the treasure that has been lavished upon the unfortunate, there seems to be an increasing demand that it should go on and on. There are many indications to warrant the belief that the increase of dependents is in greater proportion than the increase of population. In spite of the efforts made towards relief, the increase of those who need care grows faster than the increase of the means to care for them. Some even go so far as to say the race is in danger of being overwhelmed, and fear for the future of the State and society.

As we ponder on the subject, the conviction grows that there is something wrong in our methods of dealing with the question. We ask ourselves whether or not it be wise to continue forever harvesting this crop of human tares ; if it would not be wiser to follow the example of the prudent husbandman, and prevent the unprofitable seed from taking root ; if it would not be wiser still to expend more time and toil preparing the soil for the sowing that there may be economy in the gleaning.

We cannot escape the fact that a large number of criminals and those with a susceptibility to mental and physical disease, and even the paupers, are foredoomed to their fate before they are born, and should not have been born at all.

It may not be practicable for an officer of the State to sit in judgment upon those who would marry, and properly foretell the exact physical and mental mould of the progeny. The State, however, can and should be able to do as much for the breeding of men and women as is done for the breeding of the beasts of the field. The passage of a just law for the regulation of marriage, with skilled officers to enforce it, would call the attention of the public to the question most forcibly. Once it becomes a matter of serious thought and study by the people, the cure will be near at hand. There are none but would recoil from the thought of begetting offspring that would be lacking in any respect, if the question were brought home by a law that required them to pass muster before competent authority. While I firmly believe in proper selection for marriage, I do not think this is the whole evil. More criminals, paupers, and dependents generally are made after they are born than before. The children of vicious parents can be trained in the ways of righteousness if the training begin at the cradle, and the child of the good and wise can be spoiled if trained by vicious and indolent hands. We need more kindergartens and social settlements for the babies in the congested tenement districts of cities, before we add more universities for adults. If we can for one generation give to all children the proper environment and judicious training, we will have less need for penitentiaries, jails, bridewells, police stations, and criminal courts. Indeed, such training is even a most rational cure for the withering blight of inebriety, and the endless train of degenerating evils that follows in its wake.

If the proper training of children is of such moment, the greatest protection must be thrown around the sanctity of the home, for it is in the home, and only in the home, that the very best training can be had. The home, to be sacred, must be segregated, for indiscriminate crowding and association develops the evil propensities of a child rather than the good. Nowhere can the homes of the poorer people be segregated so well as in the country. Orphan asylums may be necessary and the right thing in their way for the present, but they are at best but a makeshift for the real remedy. The children of to-day will be the home-builders of to-morrow. A child raised in a public institution learns nothing of this art, and will not take kindly to it after leaving the institution.

If the money spent in the support of orphan asylums were used to find individual permanent homes among the farmers for dependent children, in the great majority of cases a robust and normal adult would be the result. The direct saving of money, if this were the rule, must be great, and the gain to the State by improving the chances of the descendants is beyond estimate.

In our day the almighty dollar is the magnet that draws all mankind. To possess it is a passion with almost all kinds and conditions of men. It holds a despotic sway in the heart of every man, whether he be high or low in society's scale. It is a powerful entity that must be reckoned with in sociological science. So strongly developed is the desire for money, and the power it brings, and so keen is the struggle to obtain it, that rest, food, raiment, honor, and even life itself, are sacrificed on its altar.

Men crowd into a decade the labor that should be spread over the threescore years and ten. Men and women suffering constantly from overwork and nervous strain cannot reasonably be expected to beget children that are robust and normal, yet the world marvels that so few of the great have offspring that can fill the parent's sphere in the world. We are too apt to forget the fact that our men with the greatest minds and the strongest bodies have been reared almost wholly in the country.

The drift of population of late years has been towards the cities and away from the country. Efforts should be made to stop it, and transplant the surplus population of cities on the broad acres. But if we are to move the surplus out from the cities to the country, our wise men must, if they can, make the dollar as easy to obtain in the country as it is in the city, for the possession of money is the goal that all are striving to reach. Those economic features that best foster the profit of the farm, then, must play an important part in the welfare of the race, and should be carefully considered by our statesmen, as well as by students of sociology.

The State of Illinois has established, under supervision of the Board of State Commissioners of Public Charities, fourteen institutions, caring for more than 12,500 persons annually, at a cost of about $133 per year each. Four of these are hospitals for the insane, affording care and treatment to 4600 males and 3000 females. Two other hospitals for the insane are in course of construction, one at Rock Island to accommodate 600, and one at Peoria to accommodate 200.

There are still about 1000 insane in poor-houses and in jails of the various counties, while Cook County maintains an insane hospital for the accommodation of about 1300; there is also an asylum for insane criminals with 125 inmates; the Eye and Ear Infirmary with about 150 patient; the Industrial Home for the Blind, with about 75 inmates, who are furnished an opportunity to earn a portion of their living at least, and are freed from the feeling of utter dependence. There is a home for feeble-minded children, with over 600 inmates, and as many more on the outside who should have the care of a similar home. The Soldiers' and Sailors' Home, with 1300 inmates; the Soldiers' Orphans Home, with 400 and over; the Home for Soldiers' Widows, with 20 inmates; the School for the Blind, with 150 pupils; the School for the Deaf and Dumb, with over 300 pupils; the Home for Juvenile Female Offenders, with 75 inmates.

The management of all the State's institutions in the humane, scientific, and financial aspect is well abreast of the times. In addition to the supervision of the State institutions mentioned, the Commissioners of Public Charities are commanded to visit "each of the poor-houses, or other places where the insane may be confined, at least once each year." There are 102 counties in the State, each of which has a poor-house. To do all this work and do it well requires almost the entire time of all five commissioners. The State asks that this service be rendered without salary, the State only paying the actual cash outlay made.

There is a pressing need for a home for epileptics, and this conference would do well to ask our legislators to provide it. To my mind, the greatest need of all is another well-equipped home, capable of receiving all the feeble-minded children in the State, where those capable of receiving instruction may be made in some degree useful, and where the others can have ample custodial care, and where all, as they grow older, can be so segregated that they will not leave any descendants to inherit the blight that makes them a reproach to our civilization

I venture to suggest the propriety of so enlarging the scope of our State Board of Health as will permit it to do at least as much for the development of man as is now being done for the development of dumb brutes. The Board of Health will not have reached its limit in sanitation till it will have prevented human beings from being born with a susceptibilty that invites the attack of the deadly disease-germs. The first necessity of human beings is good health. It is not enough that a State Board of Health should point out the way to the individual so he can avoid contact with a germ that may eat him up. It could, if it would, point out the way to develop a being so vigorous and so strong that the dreadful germ will itself be destroyed in the contest. Perhaps, too, our higher educational institutions might enlarge their usefulness if they would add to their curriculum of study a year at the forge, the lathe, the work-bench, the loom, or even a year on a farm doing the routine duty of the hired man, and working from sun-up till the darkness drives him from the field. A thorough grounding in the duties of the farm is to learn the foundation of all industries. Indeed, I pity the man who knows nothing of rural life; he is seriously handicapped, no matter into what sphere his fate may lead him. It is on the farm that a young man can better than anywhere develop a strong body and a robust and normal intellect. It is there that a ruggedness of character can best be developed that will later on make him spurn an evening at the club over wine and tobacco, where ribald jest is mistaken for humor. It will make him shun such perverted pastimes that too often lead to a degeneracy of his descendants.

Perhaps, too, such institutions of learning might with profit teach in a more practical way the physiology of man, to the end that none of their graduates would ever append their signatures to a document certifying to the wonderful virtues of Dr. Balsam's liniment. It is but fair that they should learn enough on the subject to drive out of them any superstitious notions they may have upon the cause and treatment of disease, for "the proper study of mankind is man."

In conclusion, I beg to suggest the need of this conference making a permanent organization, and meeting at least annually to study the great problems that are embraced in the broad field before us. I cannot think that the philanthropic spirit—the practical logic of the students of social law, the public spirit of the great commonwealth of Illinois—will be behind other States in this respect. She will take her place in this as she has in so many other things, having no competitors, but leading all in the fulness of her destiny.

The Physician and the Tobacco Habit.[1]

BY MATTHEW WOODS, M.D.,

Philadelphia,

Member of the American Medical Association.

I WAS taught and still believe that medicine is a sacred calling, that it combines in itself the excellences of all professions, and that the physician is, or ought to be, a man set apart and devoted to the betterment of the various interests of humanity, since the broad study of medicine considers man morally as physically and includes within its sphere the issues of life and death. As law concerns itself with man's constitutional and other rights, and theology with his relation to God, or, if you prefer it, to good and to his fellow-men, so medicine has to do not only with these, but also with the health and indirectly with the morals of the community, since these are so inseparably associated with a sound body that often bad morals to the physician simply means bad health.

---

[1] Read at the Boston Supper given by the Philadelphia Alumni Society of the Medical Department of the University of Pennsylvania, September, 1896. From the Medical and Surgical Reporter.

With this lofty conception of the duties that belong to our exalted mission, this implied necessity on our part, transmitted, perhaps, from the Greek priest-physicians, not only to avoid vice itself, but also the very appearance of evil, this positive duty devolving upon us to separate ourselves from and condemn everything that causes either moral or physical deterioration, you may imagine the sorrow that possessed many of the alumni of our common *alma mater* when they realized that this association called by her name had gone over to the Philistines, and had deliberately decided and officially announced its purpose to give the weight of its example in favor of an indulgence condemned by so many familiar with its evil effects.

It seemed just cause for grief that a body of thinking men, recognized custodians of the public health, had stamped with their approval a custom opposed to health, one that has become the bane of domestic and public ethics as well as of æsthetics, a menace to the higher education, often an enemy of moral reform, and a cause of mental decay ; a habit that has frequently caused an obliteration of that faculty which enables man to recognize the rights of others. That we, an association of physicians, should have deliberately decided to encourage this procreator of disease, this originator of an appetite for strong drink, this habit which, according to the conviction of many prominent educational and medical authorities, is the "worst curse of modern civilization," is indeed an anomaly of conduct calculated to make the judicious grieve.

I am not discussing the rights or the habits of the individual and presume not to limit the liberty of any man. I war with an association, if consent of many is the sanction for sin, deciding officially what is not only inconsistent and unseemly, but morally wrong. Since indulgence in tobacco mars the best in us, and since its use is an offence against our better selves and those who do not use it, it is both a vice and an immorality. It should be considered in connection with man's duty to himself, to develop his better nature, and to suppress what is base.

Anything diminishing without adequate return the progress-evoking quality in man is morally wrong. Yet a chief claim for the use of tobacco is that it causes ease of mind, stifles desire for action. If our forefathers had been content with the tyranny of an alien, they would never have declared themselves free. Asia was conquered by Athens and Greece by Rome, and the civilization of beyond the sea has been transmitted to us because of the discontent of the men who have gone before. And this divine discontent the narcotic weed will benumb! West Point rejects the users of tobacco, and the better colleges refuse them. They seldom are successful in either physical or mental lines, and often have a stunted development. But what care they? Like the lotus-eaters in the Homeric legend, they have eaten of the enchanted fruit, and are content to live in effortless idleness.

"The Tobacco Problem," a book on the subject by Mrs. Lawrence, says, "The evil of tobacco exceeds that of drink. Smoking stupefies the student into dull obliviousness. Tobacco soothes the excited nerves to render them ultimately more irritable. The tobacco vice is a nerve-ending gnawing that will not be denied, and under the guise of absolute physical necessity hides its cruel demands. The drug produces debility in self-restraint and weakens the power of the will; it impairs physical vigor, perverts the taste, diminishes mental capacity, corrupts the moral sense, and stimulates the animal nature. It is the cause of inferior scholarship among our students, and takes away the sense of shame in failure. The free use of tobacco is undermining the health and weakening the will of the present generation, and is as noxious as the giant evil, drunkenness. There are students, even clergymen, whose usefulness has been as thoroughly ruined by tobacco as it could have been by drink. The tobacco habit gains ground at the expense of emotional refinement and spiritual force. More young men break down in body and mind and go astray as a result of smoking than as a result of drinking."

Thus by indulgence in the debilitating solace of the weed, the power of achievement is weakened, and men handicap themselves in the struggle where only the fittest survive. The demoralizing effect of the omnipresent vice enters every avenue of life. The respectable laboring man and his family have no greater enemy than tobacco. He returns from the work of the day with a pittance only sufficient for bread, to find the larder empty, children half clad, the rent unpaid, and the wife worn out with the overwhelming perplexities of the day. Home and its misery present a spectacle that appeals to his better nature. He is a religious man, perhaps, yet with scruples against beer, but there on his mantel lies a pipe black with the stains of long usage, and soon, under the spell of its influence, what does he care for the misery of his condition, or what desire has he for the betterment of his state? Would it not be better, more manly, more courageous, to fight the ills we have with clean minds and steady nerves than to resort to the drug that moralists tell us often makes man selfish and unmannerly and sometimes worse?

The opium-eater does not compel you to eat opium; the drunkard does not oblige you to drink; but the slave of the tobacco vice, because of regardlessness of your rights, compels you to participate, by causing you to breathe the smoke he has just discharged from his own mouth. Is not this an infringement of the rights of others to breathe pure air? Is it not an inconsistency for the man practising homœopathy on himself to find fault who only practise it on others? Is it not an immorality for a man by indulgence to produce a disease for which he must constantly supply a remedy? Yet the man who tries to secure calmness of mind by the use of tobacco certainly believes *similia similibus curantur*, inasmuch as he attempts to cure his disease by the thing that caused it.

Coleridge's axiom that "every educated man ought to know all the best things" has almost become an axiom. If this applies, as it unquestionably does, to the ordinary gentleman, it does so with double force to the physician, for he needs to be a man of deep endowments, requiring a wide extent of knowledge for the proper practice of his profession. As a gentleman, associating with the most polished and best-trained members of the community, he certainly needs to be "acquainted with the best things." We cannot do our entire duty often because of unpopularity; and what causes this unpopularity more than the frivolous ostentation of narrow endowments? Yet how can any man, however limited his horizon, with the only thing quick about him, his temper, feel sufficiently dissatisfied with his own acquirements as to cause the accomplishment of Coleridge's dictum, who carries in his pocket a drug that will produce content when he ought to be miserable and ashamed! The books of Nature's inspiration and achievement are equally sealed to many men, because that with a cigar in their mouths and a tawdry newspaper in their hands they are content to be unacquainted with "best things," while they float with the tide on the vapor of a cigar.

Are there not men of good purpose in the profession who do not know a single language but their vernacular, and, like the Mesgites of Homer, do not know that right, who are utterly unacquainted with those universal tongues, painting, and music; familiar with but little about the history of their own compassionate art; not aware that the man is better than his drugs; who do not even perceive, as Professor Cross once said, that "the doctors who know nothing but medicine do not know that;" and yet, without being acquainted with the best things, are content? Or, if they do occasionally realize a deficiency in certain directions, instead of allowing divine discontent to inspire repair, light a cigar or take a bite from a mass of talismanic material they carry in their inside pocket, coerce the reward, omit the work, and, presto! they "are Sir Oracle," and when "they ope their mouths let no dog bark." Is not this a minor immorality, especially on the part of the younger men, presumably self-reliant and strong? Yet some are tobacco voluptuaries at 25 with the more exalted pleasures unknown and blotted out by an extrinsic solace tediously drawn from a weed.

Is it not an immorality to cloud the mind, already contemplative enough, by such a bourgeois indulgence in a narcotic that "weakens the memory and vitiates the appetite for proper food, produces vertigo, and enfeebles the action of the heart"?

Cleanliness the First Principle of Hygiene.[1]

BY WILHELM HOTZ, M.D.,

Chicago.

HYGIENE, the science of health, is undoubtedly the first foundation of therapeutics, the science of restoring lost health, because, without knowing the laws which maintain health, no physician can tell his patient the right way that leads him to health and give him the proper advice how to regain it. Hence disease, as we call lost health, must be in one or the other way the consequence of departure from the natural path of life, or, in other words, disease is the indication of the loss of the vital equilibrium ; its symptoms are the manifestation of the vital force to regain the normal state.

---

[1] From the Journal of the American Medical Association.

By studying such abnormal conditions and the way by which nature is seeking to lead the organism back to the prior state of health, we will find out not only the proper way of cure, but learn also how to keep up our health,—*i.e.*, the principles of hygiene.

Hygiene is as old as the history of mankind. Its highest development has always been found in the most civilized countries, to-day as well as several thousand years ago, not because they have the highest civilization,—nothing in the world develops without necessity, its motive power,—but because the more a people has advanced in so-called civilization the more are the natural laws of life usually neglected, so that it may be doubted whether the high development of science, technics, and industries of the modern world is really the result of mental progression, or is not rather the necessary effect of reduced vitality and lessened resistance to morbific influences, according to the law of self-preservation. Such *facts* induced man to find means to preserve his species, and to study the laws of health to that end.

Hygiene is therefore as old as the history of mankind, but wherever we find sanitary measures, in ancient or modern times, they always relate directly or indirectly to cleanliness. To-day we admire the magnificent structures that have been built many thousand years ago by the old Egyptians only for the purpose of securing a pure and abundant water-supply. Greeks and Romans built luxurious bathing-houses for public use, knowing already that proper care of the body is a potent factor in preventing disease. Had not Hippocrates already taught that prophylaxis is the best part of the science of medicine?

The first hygienic measures in regard to personal health which man recognized are physical cleanliness and abundant exercise. Soon after followed the acknowledgment of moderation in eating, drinking, and general manner of living. From the individual experience in relation to personal health resulted, in larger communities, the public health,—viz., general sanitary measures, as, for instance, the regulation of water-supply and the securing of pure food by the erection and supervision of public slaughter-houses and bakeries, the disposal of the dead and of the excreta, etc. Hence the more the human family developed their faculties in the direction of modern civilization, the more new measures and precautions have been found necessary to protect the public health, till finally the whole affair became a matter of governmental supervision. In brief, all hygienists, from the ancient Egyptians down to the modern scientists, recognized cleanliness as the first principle of health, and believed in realizing it by endeavoring to secure pure air, pure water, and pure food for the people at large.

The notion, however, of what cleanliness means, its correct definition, was never perfectly clear the same to everybody, because the effect of the contrary condition is also not always alike. The man of a good constitution who can stand great extremes, for instance, offers a stronger resistance to injurious surroundings and stands in less need to take care for his physical welfare than a man of more delicate constitution ; his idea about cleanliness in regard to his body, food, and surroundings will therefore be not as clear and exact ; consequently, the conception of *pure* or *impure* is a matter of individual agreement, so long as no certain scientific definition can be given of it. Such a definition cannot yet be given in every respect, but it can be very evidently and without doubt in regard to septic materials.

Pasteur, the late French scientist, discovered that all putrefaction is caused by microbes. Other scientists found that in almost all diseases microbes are present ; that disease is consequently a process of putrefaction started by certain micro organisms which found their way into our system. But the action, or better, the existence, of said micro-organisms is fortunately limited, as well as of other living organisms, and depends on suitable food ; without the proper nutritive elements they are not able to exist beyond a certain length of time, or, at least, not to propagate themselves. Since Pasteur's discovery we know that no putrefaction of organic matter can take place without the presence of microbes ; we know further that all microbes need organic material as a first condition of their existence, and that dead organic substance is a more suitable soil for them than living organisms, because the latter offer a natural resistance to all noxious influences. So we find microbes most numerous wherever dead organic matter exists,—the primary enemy of health. Hence the quick and complete destroying of all dead organic matter, which is and cannot be well protected from putrefaction, would be the best method of preventing the spreading of pathogenic microbes, those species which we have chiefly to deal with in health and disease. If microbes were necessary in nature's economy to decompose all dead organic matter in order to set free the latent energy which is stored up in all the higher compounds the organic world represents, it would be different; such seems not to be the case, however, since there are other much more efficacious factors by which dead organic matter can be reduced into single inorganic elements, than by the mediation of organisms, and which force would be better to that end than fire? Why do we not make use of the same wherever it is advisable, instead of allowing the ground on which we live to be soiled by waste and refuse of organic nature of every kind? Why is it that, in contradiction to our modern progress and our knowledge about the origin of disease, we still let the ground get infected by following the old method of burying corpses of men and animals and letting nature take care of them by the way of the most slow and unwholesome process we know of, the action of putrefaction, the same one which we know to be the starting-point of almost all diseases? I consider the micro-organisms, apart from their fermentive power, as ideal watchmen of health, because their presence and action are quite often the first indication that something must be wrong, or that our body is in an abnormal state of health. Without the prompt action of microbes on diseased tissue it would be extremely difficult to discover the lesion and its origin soon enough to prevent further injury to the system. I cannot believe that the pathogenic microbes are the direct cause of disease, but rather think that about in the same way as pure chemical poisons affect the system, disease is originated either by toxic materials, as the products of our *own* metabolism, poisoned air, impure food, and bad surroundings, or as in cases of inoculation of specific microbes by *their* products of metabolism. If this view, as given above, should prove to be correct, the hygienist has only to deal with poisonous or non-poisonous substances man is liable to come in connection with; while he should consider all the pathogenic, saprophytic, and fermentive micro-organisms as useful agents and as our natural guardians which protect us from disease. So the deductions from the bacteriologic propositions point again to cleanliness as the first factor to maintain our health.

But not bacteriologic researches alone and their practical demonstrations show the truth of cleanliness as the first principle in hygiene; still more is this assertion proven by the study and observations made on the human body under circumstances of great sensitiveness to all unfavorable influences.

In cases of direct injuries and wounds, for instance, where the natural protective organs are entirely excluded from action, we notice the influence of any infectious matter first of all, and in the most marked way. Thereupon is based, as you know, the aseptic method in surgery. The least carelessness in this respect may be followed by ill-effects, and shows evidently how careful we ought to be in introducing foreign substances into our system.

Next to the effect of direct infections by wounds, we notice a high sensitiveness of the system to all kinds of impure influences in case of disease. The first thing nature tries to do in case of disease usually is to clean the system from foreign substances and to prevent further supply. Such symptoms as loss of appetite, nausea, vomiting, diarrhœa, profuse sweat, etc., tell us very distinctly in what way the body will regain its normal state, and also where the origin of the abnormal condition lies. In nine out of ten cases I am sure that the cause can be traced to carelessness in regard to cleanliness, that there is a lack somewhere, either in reference to cleansing, dressing, and general surroundings of the body, or that the internal system has been neglected, the secretory and excretory organs are out of order; so that the poisonous products of metabolism cause a kind of auto-intoxication; but, as I said, the practice of cleanliness alone may prevent at least nine out of ten cases of disease.

The first and most important advice, therefore, the physician gives to the sick refers to general hygienic measures based upon good ventilation of the sick-room, pure and easily digestible food, and proper care of the body.

What the physician *does*, and the only thing he *can* do, for the sick is certainly to assist nature in its efforts to restore health, and, as far as the symptoms indicate the need of the system, the physician has to be only a true student of nature in order to be also a successful physician. Is the surgeon who uses the scalpel to remove or to reach the diseased part doing more than assisting nature in its endeavor to get the pus and impure matter out of the system? No: both medical practitioner and surgeon correspond in so doing to the first principle of hygiene.

Cleanliness in every respect is a vital question in infancy. Nothing, I believe, is more fatal for the new-born than neglected nursing, insufficient cleansing, and impure food. The immensely high death-rate, especially among the lower class of people, is certainly due to the carelessness with which children are nursed and left to themselves, growing up in filth and fed on impure food, more like animals than like human beings. Indeed, there is still a great field of action for the physician, where he can realize the simplest hygienic measures without having to fear that the health of the people will reach such a high state, and the people itself will become so well educated that every one may be able to be his or her own physician while the practitioner will have to starve! No matter how far off that time may be, it would certainly be better and more honorable for the profession than is our age of progressive physical degeneration, where almost every one believes himself to be able to act as his own adviser in illness, but in his ignorance swallows drugs and so-called patent medicines in astonishing quantities, according to his fallible judgment, instead of following the natural laws of hygiene, or in case of disease calling for a competent physician.

I think the more man progresses in regard to general civilization and special culture of the mind, the more stress he must lay on general health, if he does not want to endanger all that he has gained through pain and difficulties of every kind for centuries past. And if experience and science clearly teach us that cleanliness in its fullest extent is the first principle in hygiene, as I have tried to prove, then we should strive not only to acknowledge, but still more to apply this axiom of health in all respects. The deeper we go into this matter the more we realize the great truth there is in the well-known quotation, "Cleanliness is next to godliness."

A Queer Scottish Custom.

In Scotland the custom still prevails of taking down the window blinds when there is a corpse in the house and hanging white sheets across the windows. The custom also prevails in some parts of England (particularly in the northern part), and in many families a special "death sheet" is reserved for the chamber in which the corpse may lie, and is often used for many generations.

Hygiene in Florida.[1]

BY GEORGE TROUP MAXWELL, M.D.,

Jacksonville, Fla.

(CONCLUDED FROM PAGE 115.)

FLORIDA has a peculiar geographical position. Prolonging herself almost into the tropics, she is washed on one side by the broad Atlantic, and on the other by the great Gulf of Mexico. She enjoys in consequence a climate that is unique. As an all-the-year climate there is nothing on the globe comparable to it. Florida comes nearer than any country of my knowledge realizing the poet's ideal, of a land,—

> "Where every prospect pleases,
> And only man is vile."

Florida has been my home for nearly fifty years. I know her well and love her dearly. It grieves me, therefore, when her delightful and healthful climate is slandered, and her chief charm is made by calumny to appear to the world as her distinguishing curse. Beautiful Florida attracts within her borders annually thousands of invalids who come to enjoy the benefit of her health-restoring climate, and tens of thousands of tourists who rush from their frigid homes to bask and revel in her genial sunshine, yet this "Land of Flowers" is made the terror of the continent. It was not always thus. But it has been proclaimed by the highest health official of the republic "Florida, because of her mild climate and proximity to the West Indies, is the danger-point of the Union, the gateway for yellow fever." And, horrible to relate, this calumny has not only been acquiesced in, but it has been given "damnable iteration" by every officer of this State and the Union. The charge is an unqualified slander. History and logic affirm that it is a lie, and furnish substantial proofs to establish the affirmation. It, however, corroborates the declaration of Dr. Ernest Hart, that "the American public and American journalists are misled by health authorities."

This false doctrine is based upon three assumptions, not one of which is true, as experience shows.

---

[1] Address delivered at Sanford, Florida, before the Florida Medical Association.

It is declared: 1st, that yellow fever is essentially a disease of warm climates; 2d, that it is contagious; and, 3d, that it is an exotic, which is transportable, and is always imported into the United States.

First. History shows that during the first two centuries after its recognition in this country yellow fever was a disease of Northern cities. The first epidemic of yellow fever in the United States occurred in New York in 1668; and its first appearance in New Orleans was in 1769, or more than a century later. There were ten epidemics in New York before the first in New Orleans. Boston has had ten epidemics; New Haven, six; Providence, five; New York nearly seventy; and Philadelphia about the same number. It has extended as far north as Quebec and Halifax. *Per contra:* Yellow fever has prevailed only five times in St. Augustine, the oldest city in the United States. Jacksonville has had only three epidemics; and Tampa, the most southern city of the main and the nearest to Cuba, has had but five. Behold the contrast, and explain it if possible upon the ground of climate. The shortest interval between epidemics at Jacksonville was eleven years, and the longest twenty. The shortest between the epidemics at Tampa was fourteen years, and the longest sixteen. Then, there was neither State Board of Health nor health officer. In the light of these historical facts you can now conceive the effrontery that characterizes the claim of the State Board of Health that *they* have kept yellow fever out of the State six years!

But how will the advocates of the notion that yellow fever is a disease of warm climates account for the fact that residents of tropical countries do not contract the disease unless they go into infected localities? It is an established fact that residents of tropical countries, outside the infected cities, are as exempt from yellow fever as the inhabitants of Maine and Minnesota. But the testimony is quite as strong that if residents of tropical countries, who live outside of cities, visit infected localities, they, like people in other countries, frequently fall sick of the disease.

Do not these established facts point to local rather than to climatic cause of yellow fever? In support of this contention, the testimony of Drs. Sternberg, Hamilton, and Lee, the latter the secretary of the State Board of Health of Pennsylvania, is conclusive. Sternberg said, "The epidemic plague so fatal to strangers could probably be banished from Rio Janeiro by well-executed sanitary measures.'' Hamilton said, ''It is beyond question that those cities—Havana and Rio Janeiro—could be made clean and healthy if proper measures were taken,'' and recommended that the United States '' donate to the Cuban government sufficient funds to make Havana a healthy seaport.'' Lee is equally forceful in his declaration as to the efficacy of sanitary measures for changing Havana from '' a plague spot into a health resort.'' If Havana and Rio Janeiro can be made healthful by sanitary measures, as these distinguished scientists claim, and I believe, what becomes of the notion of climatic causation? Is it not annihilated; and must it not be substituted by the theory of local origin? Rob Florida of her incomparable climate; or let the world understand that this peculiar favor of Providence is a curse and not a blessing, and what would become of her? Her superb system of railroads, traversing every neighborhood, would become valueless; her hostelries, unsurpassed for splendor and comfort, would be the hiding places for owls and bats; her gardens and groves, soon again to supply to the continent the choicest vegetables and most luscious fruits, would be thrown into the range for wild cattle, and the beautiful cities and towns which have sprung into being within the last twenty years would be abandoned and deserted.

I have said that it was not ever thus. The barbaric methods of prevention now in vogue, and the ''insensate'' cruelties now practised by health boards and officials, have come into operation within a score of years. In 1877 yellow fever was epidemic in Fernandina, Jacksonville, and St. Augustine. Jacksonville essayed to protect herself against Fernandina, where its presence was first acknowledged by a rigid shot-gun quarantine, and failed. Instead of causing a panic throughout the country, refugees from the afflicted communities were invited through the press, by resolutions of town councils, and by private correspondence to seek protection in the interior towns of the State. They fled in great numbers, crowding into Tallahassee, Madison, Monticello, Starke, and other places. Many refugees were attacked by the fever after reaching those '' cities of refuge.'' In Monticello there were fifty cases and six deaths. Dr. Gaskins attended twelve cases at Starke among the refugees from Fernandina. There were cases of fever and an occasional death in other places. The disease was not communicated to a single resident of the places which so generously afforded sympathy and hospitality. That was under the old *régime*,— behold the contrast under the new!

Ten years later, in May, 1887, yellow fever was declared to be at Key West, an island more than one hundred miles from the nearest point reached by the usual routes of travel, and perhaps two hundred miles from Orlando, in the interior. Yet the local railroad agent at that place sold $5000 worth of tickets in forty-eight hours after the announcement to persons who were to fly from the imagined danger. And when in the fall the fever was declared to be in Tampa, every city, town, and farm-house was converted into a fort, garrisoned by armed men to repel the wretched refugees who had left the comforts of home to seek safety, and who, instead of the hospitality they had hoped and expected, were driven into the woods like wild beasts. This is the order of things under the latter-day health authorities, who are misleading "the American public and American journalists."

Unhappily, under modern mismanagement, there is no escape for the well, if the officials can prevent it. Upon the happening of a case of fever, or even a suspicious case, as at Sanford in 1889,—which sent a thrill of horror over the whole country, depressing stocks as far away as Chicago,—an armed guard is placed around the doomed locality, and well as well as sick are corralled ten days, no longer, with the certainly that, if an epidemic results, suffering will be increased and deaths multiplied.

Second. That yellow fever is a non-contagious, non-communicable disease is a point so well established that it seems hardly worth while to discuss it. Dr. Sternberg says, "The yellow fever patient, however, does not directly endanger those who come near him any more than a gelatin culture of the spirillium of Asiatic cholera, or anthrax bacillus place in danger the student of bacteriology who is engaged in studying it." And after giving many instances in proof of that statement, among them the experience of the camps near Memphis, of which he said, "In no case did they communicate the disease to their families and bedfellows." He adds, "Evidence of this kind could be extended to fill a volume, but sufficient has been presented to establish the statement, and the reader may be referred to the proofs of non-contagion in the second volume of the classical work of La Roche." Sternberg does not qualify the statement in the slightest degree. He does not say that some times, or in the absence of "ideal sanitary conditions," yellow fever is contagious; but he declares, "*Never* do yellow fever patients communicate the disease to others."

Third. That yellow fever is a disease of local origin has been demonstrated with equal clearness and force. Every epidemic, from and including that of Tampa, in 1887, those of Jacksonville and Manatee in 1888; of Brunswick and Jesup in 1893, to the two fatal cases at Pensacola in the same year, were proven to have been of local origin. And the case of Neuman at Port Tampa was contracted by a visit to the ship "Markomania," after she had been subjected to quarantine, fumigation, and disinfection. That distinguished man whose reputation in connection with quarantine and disinfection is world-wide, Dr. Joseph Holt, after four years' service as president of the State Board of Health of Louisiana, said, "Quarantine as we may! Build a wall without gates, if we will,—until the city is provided with a superficial and subsoil drain, and its sewage disposed of through some efficient system, we live in jeopardy, yea, in the certainty of danger."

Let me, in closing, direct your attention to a lively contrast. When that brightest ornament of our profession in this State, the late Dr. John P. Wall, after an absence of weeks, because, for giving warning of danger on account of the unsanitary condition of the city, he received only personal abuse, returned to Tampa the latter part of September, 1887, he quickly discovered, what he had apprehended and anticipated, the presence of yellow fever. His first step was to control the telegraph to prevent the transmission of the intelligence to the outside world. His next was to encourage and promote the flight of three-fourth of the population, before the panicky health authorities could invest the city with a cordon of armed men. He was almost universally condemned by what he called "panicky editors and nincompoop doctors." But his day of triumph came; and I can imagine the emotions which swelled his noble heart, when, after the excitement caused by groundless alarm had subsided, he claimed, "The result has vindicated my course which prevented an increase of calamity that would have amounted to a holocaust in the sacrifice of life." Dr. Wall's conduct was guided by science and was supported by experience.

In 1889 a woman died in this pretty little town, Sanford. Her symptoms were pronounced to be "suspicious." This fact was immediately put upon the wires, and a thrill of horror swept over the continent. A shot-gun quarantine of fifteen days was ordered and enforced. Sanford, helpless in the grasp of the health authorities, was paralyzed. Citizens were not permitted to fly from a great danger had the suspicion been confirmed, and friends were not allowed to visit the condemned locality. Among the regulations was one forbidding all public assembling, and requiring offices and stores to be closed and all business suspended at 6 o'clock P.M. To the latter part of this restrictive regulation there was made, however, an exception. On Saturday nights the storekeepers were permitted to keep their places of business open and shoppers were allowed to make purchases till 9 o'clock P.M. I can conceive of no reason for the exception, unless there was a compact entered into between the health officer and the microbes, under which the latter stipulated to delay the exercise of their vicious propensities three hours one night in the week. This was not science, for science is common sense. It was jugglery.

Oh, Hygiene! Hygiene! how many crimes are committed in thy name!

The Eyes.

The eyes are undoubtedly the most beautiful and interesting feature of a face. "The windows of the soul," as they have been rightly called, for from the eyes the soul looks forth, and from them can be told, more or less, what is passing in the mind. There are soft eyes and hard eyes, bold and shy eyes; eyes with a dreamy, far-away look, and sparkling, bright eyes.

Much of the expression of a face depends on the eyes, and we can often say with our eyes what we cannot express with our lips. Joy and sorrow show at once in the eyes, and it is there we look for sympathy. As far as beauty goes, it does not very much matter what color the eyes are, so long as they are clear and bright, with the pupils moving easily and varying with the thoughts.

Now, the eye is a most delicate organ, and requires the greatest care and attention. If we take care of our eyes we shall be amply repaid in keeping our eyesight unimpaired. Of course, that is to say, provided we start with a sound pair of eyes.

Every one who possesses such a pair should feel very grateful indeed, for nowadays it is lamentable to see the number of people who are obliged to wear glasses. This often arises from neglect and overtaxing. The strongest eyes will fail if overworked or ill used in any way.

THE ANNALS OF HYGIENE
PUBLISHED MONTHLY
SUBSCRIPTION TWO DOLLARS
A YEAR, IN ADVANCE.
Address all communications to
UNIVERSITY OF PENNSYLVANIA PRESS

EDITORIAL

All subscriptions to "THE ANNALS OF HYGIENE" are taken "until ordered discontinued," and no agent has authority to make any other arrangement. At end of time to which subscription has been paid or promised, a bill for a year in advance, with return envelope, is sent, and if journal is no longer wanted, the subscriber should mark "Discontinue" on the bill and return to us. A failure to so return bill is considered an order to continue.

COMMUNICATIONS SOLICITED.

We are always anxious to receive short communications—500 to 1000 words—on practical subjects pertaining to hygiene. To any one sending us an acceptable article, we will forward THE ANNALS OF HYGIENE for one year *free*.

Sleep.

A GREAT philosopher has said, "Take from man *sleep* and hope, and he will be the most wretched being on earth." Sleep is as necessary to life as is food. Every act of life, every thought, word, movement of any kind, each contraction of the heart, every performance of the liver, kidneys, and all other organs entails, as the result of its performance, not only the consumption of tissue, but also a certain amount of fatigue. The body becomes exhausted in every part from the mere act of living ; the combined exhaustion of the individual parts makes the general fatigue of the whole body.

During sleep every function of the body is carried on less rapidly. All the *voluntary* duties and performances of life are absolutely suspended. Thought, motion, sensation are all in abeyance ; they are for the time being dead, so that but little vital force is required to keep them in action. They are like unto a horse that after a hard run is allowed to walk slowly along a shaded country road that he may gain strength for another run.

These organs act slowly, generating a certain amount of vital power, a small portion of which only is consumed in giving them power to do their duty, while the remainder is stored up in the body for future use.

After awhile a sufficiency of this force is accumulated ; the exhausted organs and parts are refreshed and are ready to again resume their active life; the sleeper awakes with a fresh stock of vital force in every portion of his body, and is once more ready to take up his active daily duties.

Thus you understand the necessity for a full amount of sleep. When exhausted, you can by an exercise of your will-power, or by the use of stimulants, *drive* your body to do more work, but you will do so at the expense of your health. It will be like forcing a jaded horse to more exertion by a liberal use of the whip or spur. He will go on because you force him to do so; he must move, since a will-power stronger than his own commands it; but he will suffer in health and strength for this unnatural labor.

So is it with the human being. A man of strong will can labor even when very much exhausted, but the strongest man will surely, sooner or later, suffer for this abuse of his organs.

This fact cannot be too strongly noted, since overwork and too little rest and sleep are the greatest enemies of health that we have in this country. When an energetic, go-ahead American has any labor that he desires to accomplish in a given time, he cares not how long he works; he is ready to turn night into day, and will not rest until he has finished his task.

This hurry and want of rest is the principal cause of the many premature physical wrecks we daily meet with.

An imperative law of nature is that the whole body must be absolutely rested (such rest as it can receive only from sleep) for a certain number of hours out of every twenty-four. Of course, it is impossible to lay down an absolute rule as to just how much sleep a person requires; but to be definite, we can say that the average individual requires not less than eight hours of sleep.

Some can do with less, and some require more, but this can be stated as the average.

It is not a matter of indifference, as many suppose and claim, *when* you take these eight hours. There is a proper time for everything, and no other time can be so good. This is true in an especial manner of sleep.

Since sleep is necessary for the renovation of the exhausted energies of the body, it is evident that the proper time for sleep is when the body is exhausted; and it is apparent that work of all kinds should be suspended when this fatigue comes on.

To establish a rule, we would say that adults should retire at ten o'clock and rise at six ; growing children require more sleep.

Of course, going to bed at nine or ten o'clock will interfere with many duties of fashionable society ; but you must put these two propositions before you and decide which to adopt :

(1) Become ardent members of fashionable society, go to balls and parties, eat late suppers, go to bed at two, three, or four in the morning, and remain there half the next day, be constantly complaining of headache, dyspepsia, backache, and *die young*, or

(2) Eschew fashionable society, living in accordance with the teachings of hygiene, of nature, and of experience, enjoying all *rational* pleasures as every *sensible* person does, and never have an ache or a pain, feeling always well, cheerful, and happy, never experiencing either the *heartaches*, or the unnatural stimulation and abnormal depression of the devotees of fashion ; and, finally, dying *old men or women*, whose memory will be loved and cherished, and whose examples will be held up for the guidance of future generations, while the butterflies of fashion pass prematurely away, as little noticed and regretted, and as soon to be forgotten as the leaves of the forest.

You *must* choose one of these propositions, and it will be well if you are wise enough to choose the second. You may not think so, but you surely will if you are 40 years old.

Fashionable society and good sleep are incompatible.

Some will call us "old fogies," and for a time it may *seem* that we are wrong ; but when the man of 50, continually complaining that his "*liver is out of order*," suffering all the time from dyspepsia, never knowing what it is to have a good night's sleep, sits down to reflect, from the ashes of the past, like accusing angels, will rise up a long list of champagne dinner parties, of balls and dissipation, of overwork and worry, of fashionable assemblies, and the like, of terrapin suppers at three o'clock in the morning. When lying awake at night, restlessly tossing, unable to sleep, though he has worked hard all day and retired early, these visions will again come before him, and he will despairingly cry out, "Why can I not sleep as I once could ? When I indulged in all these good things, I used to sleep like a top." Yes, my friend, but you were then abusing yourself ; you were making unnatural demands upon your inheritance of vital force ;

your capital was then large and could meet all demands made upon it; but by extravagance you have so squandered it that now but slight exactions will create a panic, for you must remember that "*the excesses of youth are drafts upon maturity, payable twenty years after date.*"

During healthy sleep the brain is in an anæmic state, which means that there is less blood in this organ than in the waking state.

There is a condition called *stupor* or *coma*, which simulates, yet is not identical in any material particular with true sleep. When an intoxicated man falls across the bed in a condition of drunken unconsciousness, he does not really sleep, though he seems to do so.

Instead of having less, he has more blood than usual in his brain. But it is poisoned blood; it is full of *carbon*, which has such an evil influence on the brain as to interfere with all of its duties and functions.

If you were to sit in a *close* room in which the gas was escaping, but not lighted, you would soon become unconscious; you would not be asleep, but your senses and all the functions of your brain would be suspended by the poisonous influence of the carbon in the escaping gas. Your condition would be similar to that of the man in the drunken stupor.

Alcohol is rich in carbon and acts upon the brain just as does the inhalation of gas. To prove that this condition is not that of sound sleep, reflect upon two facts. Let a healthy man immediately upon rising from a long night's refreshing sleep drink a very large quantity of whiskey. At first he will be stimulated, but in a short time, though he has done no work to tire him, he will fall into the condition of *apparent sleep*, and will so remain until the carbon of the alcohol has been removed from his body. If you feel his head, you will find it to be warm or hot.

It would be impossible for the desire for *healthy and natural* sleep to come on so soon after several hours had been passed in sleep, and it would be likewise impossible for the head to feel hot, unless there was a great deal of blood in it. Hence, you see that *stupor* and *sleep* are very different conditions; the former is an unnatural condition of unconsciousness caused by the action of some poison on the brain; the latter is a natural condition, whereby the brain and the body are rested.

When you are sleepy, the blood-vessels in your brain are contracting and driving the blood out of this organ that it may become anæmic. Suppose now, by the force of your will, or by the use of some stimulant, you keep these vessels full of blood; see what happens. If you take an India-rubber band, and alternately stretch and allow it to contract, its contractile power will remain intact for a long time. But put this same band around a large bundle of letters, and thus keep it constantly on the stretch, after a time its power of contraction will be almost lost. So with these blood-vessels of the brain. If you refuse to allow them to contract when they want to, and you keep them on the stretch abnormally long, they will lose their ability to contract and will remain permanently dilated.

So, then, you can see why sleeplessness is an usual accompaniment of excessive brain-work. The essentials, then, for good sleep are,

(1) Regularity.
(2) Exercise.
(3) Good digestion.
(4) Freedom from anxiety of any kind.
(5) Abstention from overwork, mental or physical.
(6) To sum them all up. An easy and equable mental condition that cannot exist without all the five other conditions.

Mental Exercise.

A BABY is weak; its muscles are incapable of lifting any appreciable weight; it cannot even hold its own little body erect. As it grows older, these muscles, as the result of use or exercise, grow stronger. To demonstrate that the increase of size and power of muscles is due to exercise or use, and would not occur without it, let us give an illustration.

If you would take a little boy, 10 years of age, and bind one of his arms to his side, not tightly enough to interfere with nutrition by obstructing the circulation, but so firmly that he would not be able to move this arm, when this boy grew to manhood he would have no more power or strength in this arm than he had when he was 10 years old. Again, when a limb is paralyzed, its power of motion is lost; the will cannot cause it to move. Its nutrition goes on all the same, but, on account of the absence of motion or exercise, it wastes or withers away. So that exercise or use is necessary for the full development of any part.

What is true of the muscles is equally true of the mind. If you were to place an infant in some isolated situation, where, while it had plenty of food, it was denied all means of cultivating the mind, it would ever remain a child, intellectually, while it might become, physically, a full grown man or woman.

When the editor of this journal was a resident physician in the Philadelphia Hospital, we had, among the inmates of the poor-house attached to this hospital, a woman, 50 years of age, who had been brought to the institution when she was only 4 years old.

During these 46 years she had been only once beyond the walls of the institution, and then only for a few minutes. She was, in all her ways, like a girl 9 or 10 years old. Her world had been narrowed down to the inmates of this institution ; her mind had been denied opportunities for cultivation, it had never been exercised, and was very immature ; she would play with dolls, and her chosen companions were the children in the house.

It was, really, a sad sight to see this gray-haired woman taking part in childish play with as much pleasure as those young enough to be her grandchildren. Yet there was no insanity or idiocy here ; the mind was all present, but from want of use, or exercise, it had remained nearly as it was in childhood.

The mind must be kept in motion, just as with the body, else it will not develop. Just as the muscular system can be developed in any particular part, by specially exercising such part, so can the mind.

As the external muscular system can be developed so as to produce great brute strength, so any function of the mental organization can be cultivated to great exactness by constant use or exercise.

We see proof of this fact continually before us in men and women who have become famous in some special branch of mental work. In medicine, we have *specialists* in certain diseases ; it is the same with lawyers, engineers, and artists ; he who has made a special study of a special subject has, thereby, specially developed a certain portion of his mental organization, just as the blacksmith, by a special use of the muscles of his right arm, has developed these muscles in an especial degree.

Tea-tasters so cultivate the sense of taste by repeated and constant use of this sense that their services are in great demand in commercial circles. By constant effort in this direction *mem-*

ory can be so cultivated that astounding development of this faculty will result.

The sense of smell, of sight, of hearing, of touch, all, indeed, are capable of development by exercise.

But here, as in the case of the physical being, the desideratum, the most perfect type of manhood, is to be derived from a judicious and divided development of all the mental faculties. To accomplish this every function of the mind must be kept in motion, as every muscle of the body is.

One must cultivate his powers of observation ; he must not walk through life like an automaton, looking neither to the right nor the left. He must notice all that goes on around him, and *think* about all the occurrences of life.

His mental occupation should be varied, for monotony will ruin the mind.

The life of a person who devotes himself to literary pursuits should be varied. He ought to read, write, think, converse, and listen to the conversation of others. Thus will he exercise all portions of his mind, and he will be capable of performing a greater and more varied amount of work.

The most perfect type of humanity results from a judicious exercise of both the mental and physical powers.

Business men care very little about mental development beyond that requisite for the successful prosecution of their business. This is a mistake ; for we can assure them that they would enjoy their wealth much more than they do, if they would exercise and educate the mind.

If, instead of accumulating a library of *handsomely-bound* volumes merely for show, which they never use, they would read these books and reflect upon their contents, their ideas would become enlarged, developed, and refined. They would realize that there existed a world outside of their counting-rooms ; they would become intimate with the great minds and sublime thoughts of other days, while they would regard the pleasures and duties of life from a less sordid stand-point.

This reading and subsequent thought would constitute *mental exercise.* The more a person reads, the more will he like to read ; the more he thinks, the more capable will he be of thinking.

Thus, then, unconsciously to himself, would his mental being expand ; he would gradually become more truly a *man*, one to whom life would offer greater *real* pleasure, while he would be more capable of being of service to his fellow-men while he lived, and would leave a greater void when he died.

But, with mental exercise, as with muscular exercise, one must be careful not to go to extremes. Excessive mental exercise will act upon the health of the mind just as excessive muscular exercise will act upon the health of the body. While an excess in one direction may so develop one part as to make you a *mental prodigy*, this excess will react unfavorably upon the other parts, and upon the body at large. As with the body, so with the mind,—gentle use, or exercise of *all* the parts, is what we should aim at.

While we cannot find quite so accurate a guide to warn us of *mental excess* as is the action of the heart to warn us of *physical excess*, yet, whenever one who is using the brain commences to suffer from persistent headache, or to lie awake at night, unable to sleep, nature is sounding a warning that *excessive* mental exercise is being indulged in.

Child-Study.

It is an evidence of the advance of knowledge that the wise parent to-day studies the child and measures his physical development by the physical standards that science has established. He keeps himself in touch with the best knowledge. Foods are no longer considered merely the natural provision to meet the demands of hunger, but as the remedies, the protection, the substitutes provided to meet the physical needs of each body. This is one of the results of child-study. Precociousness and stupidity are regarded as symptoms, and no longer as the cause of pride or shame. The physical causes are studied. If the child is stupid, his sight, his hearing, may be at fault. If he does not spell, an effort is made to discover whether he is tone deaf. If he grows tired quickly, common sense seeks to discover whether his chair and his desk are suited to his height. If he is irritable, it becomes a question of food. If he does not develop physically, it becomes a question of exercise and nutrition. The temple of the Holy Ghost is considered worthy of the best care and intelligence that time and education have developed.—*The Outlook.*

NOTES AND COMMENTS

"Bad Teeth" his Barrier.

"Bad teeth" was a medical examiner's reason for rejecting a recent applicant for a position in the Brooklyn Fire Department. The applicant had passed the civil service examination, but the physician argued that unsound teeth meant an impaired digestion, and so unfitted a man from arduous physical exercise.

How to Fumigate a Room.

To fumigate a room with sulphur, use two pounds of rock sulphur with one pound of flowers of sulphur to every 1000 cubic feet. Put the sulphur in a tin dish, set in a pan of wet ashes or a pan containing brick, to prevent any danger of fire. Put the rock sulphur at the bottom, the flowers of sulphur on the top, and pour two tablespoonfuls of alcohol over them just before you apply the match. Leave the room instantly. Every door, window, crack, or crevice in the room must be closed. It may discolor the paper. That depends on the color. All the metal work must be removed.—*New York Tribune.*

The Effect of Alcohol upon the Growth of Children.

M. Lancereaux details the important facts in a striking example, and goes on to say that in the alimentary hygiene of children milk should not be neglected, because it contains all that is necessary for their development,—fatty substances, albumen, oxygen, and the principal minerals. With it we can be certain that the growth will be normal; that there will be no failure in height, no rhachitis, no bony lesion. The use of alcohol by children is one cause of depopulation. The conclusion reached is that it is as dangerous as is an excess of alcoholic beverages for an adult; for the adolescent they are deadly, because they cause organic changes, hinder physical development, and impair the normal faculties even to the extent of degeneracy. For these reasons, then, alcohol should be proscribed as drink for children. —*Journal des Praticiens.*

Poison in Cosmetics.

At a recent meeting of hair-dressers in Paris it was stated that the rice-powder, sold largely to ladies as a cosmetic, was by no means as harmless as its name indicated, but contained varying proportions of white lead, chalk-starch, and alabaster. Many years ago, owing to the chemical investigation of the face-powders at that time popular with the American ladies, this evil was in a great measure corrected, but it is not at all improbable that it is again a source of danger in America as well as in France.

Mummied Alive.

Professor Maspero, the renowned Egyptologist, is authority for the statement that among the royal mummies unbandaged in 1866 was one of a young man who had evidently been embalmed alive. The body had been tightly bound in three places and then coated with bitumen, lime, and pounded resin, and then wound from head to foot with bandages which had been soaked in some glutinous preparation. The agonized expression of the face and other evidences gave the scientists their clue. His age was probably about 23. The gold ornaments on his body indicated that he was of high rank, and likely the victim of some terrible tragedy.—*Pittsburg Dispatch.*

Biblical Measures and Distances.

Do you want to understand your Bible better? If so, you must know that: A day's journey was about twenty-three and one-fifth miles; a Sabbath day's journey was about an English mile; Ezekiel's reed was nearly eleven feet; a cubit was nearly twenty-two inches; a hand's breadth was equal to three and five-eighths inches; a finger's breadth was equal to one inch; a shekel of silver was about fifty cents; a shekel of gold was $8; a talent of silver was $538.30; a talent of gold was $13,809; a piece of silver, or a penny, was thirteen cents; a farthing was three cents; a mite was less than a quarter of a cent; a gerah was a cent; an epah, or bath, contained seven gallons and five pints; a bin was a gallon and two pints; a firkin was seven pints; an omer, six pints; and a cab, three pints.—*Pittsburg Dispatch.*

Air used by a Human Being.

Dr. Radcliffe Hall makes the following interesting calculation on the amount of air a human being of the average size and proportions will consume in the space of one minute when in repose, and also when in the different degrees of activity. When at rest we consume 500 cubic inches of air per minute; if we walk at the rate of one mile an hour we use 800; two miles an hour, 1000; three miles an hour, 1600; four miles an hour, 2300. If we start out and run six miles in an hour we will consume 300 cubic inches of air during every minute of that time.

Tomato-Poisoning.

Before the Bristol (England) Medico-Chirurgical Society Dr. F. H. Edgeworth read a paper on a case of poisoning by unripe, decomposing tomatoes. A boy who had eaten a large quantity during the day was found lying unconscious in the street and brought to the infirmary. He lay in a semi-conscious condition for three days, frequently vomiting and passing half digested tomatoes. As he recovered from this state symptoms of meningitis, severe headache, retraction of the head, and double optic neuritis came on, lasting for three weeks, and then gradually subsided; there were also signs of peripheral neuritis most marked in the legs.

Cemeteries of Elephants.

The ivory trade with Africa is conducted on a scale of far greater dimensions than most people have any idea of. Last year nearly 700 tons were imported into London alone.

This would mean that in the ordinary way the elephants would soon become killed off, were not the largest part of the importation taken from the stores which have been laid up by nature, as if in anticipation of the requirements of modern people.

These stores are practically the cemeteries of the elephant world for centuries and centuries, and the ivory is fetched from them by the natives and sold to the traders, to be by them exported with comparatively little trouble, and without incurring any risk to their lives.—*Pearson's Weekly.*

THE ANNALS OF HYGIENE
PHILADELPHIA
VOL. XII NO. 4

COMMUNICATIONS.

The Nervous System in Disease.

A PLEA FOR GREATER RECOGNITION OF THE ALL-PERVADING INFLUENCE OF THE NERVOUS SYSTEM UPON DISEASE IN GENERAL.

BY JOSEPH F. EDWARDS, A.M., M.D.,

Atlantic City, N. J.,

University of Pennsylvania, 1874; Ex-Member of State Board of Health of Pennsylvania; Founder and Editor of THE ANNALS OF HYGIENE; Foreign Associate Member of the French Society of Hygiene; Fellow of the College of Physicians of Philadelphia; Member of the Philadelphia County Medical Society, etc., etc., etc.

ALL functional disorders—that is to say, all derangements of function—have their origin in the nervous system, and can be cured only by restoring the nervous system to a normal condition.

This is a fundamental proposition, in the elaboration and full comprehension of which is to be found, I think, the true measures for the *cure* of functional and the *retardation* and *relief* of organic diseases.

An organic disease implies some change in structure or composition of the organ affected, and is incurable, but capable of amelioration; a functional disease is not, in reality, a disease, if I may be pardoned the Hiberianism; it is not a disease, it is a disorder; it is merely a disordered or deranged action of the organ so affected, but so intimate is the action and the reaction of the function upon the structure of an organ that, if not corrected, a functional disorder will ultimately produce organic disease.

The human body is a collection of organs and parts, each part having its own special duty to perform in the phenomena of life; each part closely allied to and dependent upon each other part, the result of the action or function of the whole being what is familiar to us as life. Health is the sum total of activity of normal organs and parts; disease is the abnormal activity of one or more organs or parts; the organic activity is present and manifest in disease as in health, but it is an abnormal activity; it is an activity that produces results not in accord with our ideas of health, an activity that gives us pain, discomfort, uneasiness, some feeling or sensation that makes us aware of the fact that our organs are not doing what they are intended to do; that our functions are not normal; that we are not in a normal condition; that we are not in health. Both in health and in disease, then, there is an organic activity, the former normal, the latter abnormal.

The body is a collection of organs and parts, I have said, all necessary for life, all designed to play their part in the production of either normal or abnormal life, as the case may be, *yet not one single organ or part possesses within itself the power of originating or maintaining vital activity*. This is, of course, a well-known fact, yet I fancy that its full significance is not sufficiently realized in our efforts to cure disease. We are too prone to regard each organ, or set of organs, as an entity, and too apt to direct our curative methods towards this false conception.

One may conceal a soiled shirt with a large necktie; he has not cleansed it and it grows more and still more soiled daily, though neither he nor his neighbors are aware of the fact; so one may relieve dyspepsia by putting drugs into the stomach designed to digest the food; but by so doing he is not removing the condition of the stomach that caused the dyspepsia. In reality he is making matters worse.

It is a law of nature that nothing useless in the economy of nature is allowed to survive; there is no room for drones; hence, anything or any function not in use gradually evolutes out of existence. If, then, we digest food in the stomach by the aid of drugs introduced from without, we thereby relieve the stomach itself of the necessity of doing its work, of performing its function, when, in accordance with natural laws, the function of digestion gradually evolutes out of existence. Muscles that are not used waste away; the stomach that is not forced to digest food gradually loses the power to do so; drugs, from without, will do the work; but, as each day goes by that the stomach is thus relieved of the necessity of performing its natural function, each day does it become still less equal to the work, so that when the drugs used to cure the dyspepsia are discontinued, the disorder is more pronounced than it was prior to their use. The dyspepsia was *concealed*, not *cured*, and while *concealed* it was steadily becoming more confirmed.

Use, then, is necessary, absolutely necessary, to the continued existence of any function or part; activity is a prerequisite of continued existence; but activity is not inherent in any organ or part; the heart, lungs, stomach, bowels, kidneys, spleen, all must be active lest they perish; yet the power of originating or maintaining activity does not reside in any one of these organs; of themselves alone they are dead masses of organic matter.

To illustrate: the heart, contracting and relaxing eighty times in every minute of our existence, does not possess, in itself, the power to contract or relax once. Sever its nervous connection and the heart is dead; it is then but a mass of dead and decomposing organic matter; the heart has not been touched; it looks the moment after just as it did the moment before this severance; but do what you may you cannot make it contract; it is dead.

That which is true of the heart is true of every organ of the body; not one of them can originate the power necessary for its own activity. They all possess the ability to make manifest a power transmitted to them, but they cannot originate this power. The nervous system alone possesses the power of originating vital activity. The integrity of the nervous system is dependent, it is true, to a certain extent, upon the integrity of the other organs; but I believe that the integrity of the other organs is dependent, in an especial manner, upon the integrity of the nervous system; in other words, I believe that all functional disorders and many organic diseases have their origin in the nervous system, and that the rational method of cure consists in the restoration of the nervous system to a normal condition.

Let us view the human body as a chemical compound and it will make my idea still more clear.

There are about seventy elements in nature; about fifteen of these are found in the human body; hence, the human body, viewed from the chemical stand-point, is a combination of fifteen elementary bodies. Now for three propositions:

(1) If these elements are present in proper amounts, propor-

tions, and combinations, the resultant product must be a perfectly healthy human being; it cannot be anything else. If this proposition is granted, and I cannot see how it can be denied, the second proposition must follow as a logical sequence.

(2) Whenever disease exists, it must be because some of these elements are in excess, or are deficient; or because there is some fault in their combination; such excess, deficiency, or faulty combination, being due to some cause working from within, or to the influence of some poison introduced from without.

(3) Recognizing the universal and all-potent influence of the nervous system, is it not rational to assume that a normally acting nervous system would be antagonistic to the elementary changes that seem to be necessary to the existence of disease?

If the nervous system is in good condition, would it be possible for these elementary disturbances to occur? hence, with a normal nervous system, is disease possible?

To illustrate: let us take fatty degeneration of the heart. The heart is a muscle that is being continually destroyed and continually regenerated, each pulsation causing the destruction of some particles of tissue, which, in health, are replaced by other particles, like unto those that have been destroyed. In fatty degeneration of the heart particles of fat are deposited in the walls of this organ in place of the normal tissue; now this is a nutritional change; abnormal takes the place of normal tissue; but the heart has no control over its own nutritional changes, any more than a horse in harness can control the road he will take. The nervous system controls the nutrition of the heart, and if a normal nervous system transmits normal nervous force to the heart, it will be, obviously, impossible for such abnormal deposits to take place.

Hence, fatty degeneration of the heart really has its origin in the nervous system, and the same can be said of very many, if not all, disordered or diseased conditions.

Take gout, rheumatism, lithæmia, and all such conditions, or diseases, as are dependent upon a faulty or incomplete elimination of waste products. Excretion of waste matter is a function participated in by many different organs; but, as we have seen, these organs are merely agencies, acting under the influence, control, and direction of the nervous system; hence, if they do not perform the full measure of their duty it is because the nervous system is not supplying them with the requisite power. Of course, we have conditions wherein there is organic disease of the excretory organs, which incapacitates them from fully performing their duty, and would do so, no matter how much nor how excellent might be the quantity and quality of nervous force supplied to them ; but whatever capacity for function may remain in these organs will not be made fully manifest unless they receive a vital force from the nervous system, and just in proportion to the integrity of this force will be the integrity of these organs.

To make my idea very clear, let us consider the difference between a living and a dead man. The thought has often presented itself to one gazing upon a dead body, "What has happened here? What has gone out of this body? What has caused this change? The shape, form, weight of the body, dead, is just as it was a moment before when the body was alive ; the stomach, heart, liver, kidneys, spleen, all the organs, are there now, just as they were a moment before; the muscles, skin, eyes, nose, ears, all can be seen, but the body is dead. What has happened? Why cannot the loved one move and speak and look and think and breathe as he did but a short time before? What has wrought this awful and mysterious change, a change ever new and terrifying, yet occurring every minute of the day?"

The nervous system has ceased to generate vital force, and all the organs and functions come to a stand-still.

If, from some cause, the dynamo supplying the city with light breaks down, the darkness of death is over everything ; the electric light burners may be capable of manifesting light, but the requisite power is wanting ; the organs of the dead man may be capable of function, but the dynamo has broken down ; the nervous system no longer makes the requisite power.

It seems to me that we have now reached a point where I can venture the assertion that the *nervous system is the vitalizing department of the human body ; that it originates vital force and transmits it to the different organs and parts of the body ; that the nervous system presides over, regulates, and controls all our functions ; that a normal nervous system will produce normal function ; that an abnormal nervous system will produce abnormal function ; and that the greater majority of functional disorders, no matter where located, have their origin in, and are perpetuated by, an abnormal nervous system.*

I do not claim originality for these facts ; they are based upon sound physiological doctrine; I claim only that I am calling attention, in an especial way that has not hitherto been done, to the paramount influence of a deranged nervous system as a causative factor of disease in general, and to the necessity of investigating the condition of the nervous system and treating it in all cases of departure from health.

I am not writing of diseases of the nervous system, but *of the influence of the nervous system upon disease in general*, contending, as I believe and have demonstrated, that in the very great majority of cases in which we can exclude organic disease we will find the cause of the symptoms of which our patients complain to reside in a disordered nervous system, and to be best relieved, permanently, by restoring this disordered nervous system to a normal condition.

Now, it must be distinctly understood that what I have written is not merely theory; any plausible brain can evolve plausible theories that will not stand the test of practical experience; hence, one must be always cautious about accepting deductions based upon theories, unless they have been subjected to the searching test of practical experience. The ideas that I have been enunciating and will set forth have come to me gradually during years of observation; first facts presented themselves, at first unnoticed, their constant repetition finally forcing them upon my attention; then practice based upon these facts, then a theory to fit these facts, this theory confirmed by years of practice; this has been the process by which I have been confirmed in my belief in the correctness of the views that I am enunciating.

Some years ago a young person, apparently in the most *vigorous health*, said, laughingly, to me, as we met on the street, "Doctor, I am getting paralyzed; you could cut off my fingers and I would not feel it; I have such a tingling in my left arm." A few more laughing remarks and we parted. Two weeks later this person was seized with pneumonia, evidently of microbic origin. Examining the urine for another purpose, I was struck to find it loaded with the *débris* of a broken-down nervous system. This case made a deep impression upon me, but I did not, at the time, appreciate its full significance. A little later on I was called hurriedly to a frightful case of general erysipelas following an operation for cancer of the breast in a large, vigorous woman. She was desperately ill, and it seemed impossible that she could recover. An examination of the urine again revealed a broken-down nervous system. Remedies calculated to build up the nervous system were prescribed; the patient recovered; still more, these remedies were continued; cancerous nodules that had formed in the other breast disappeared, and this woman is to-day in the enjoyment of apparently perfect health.

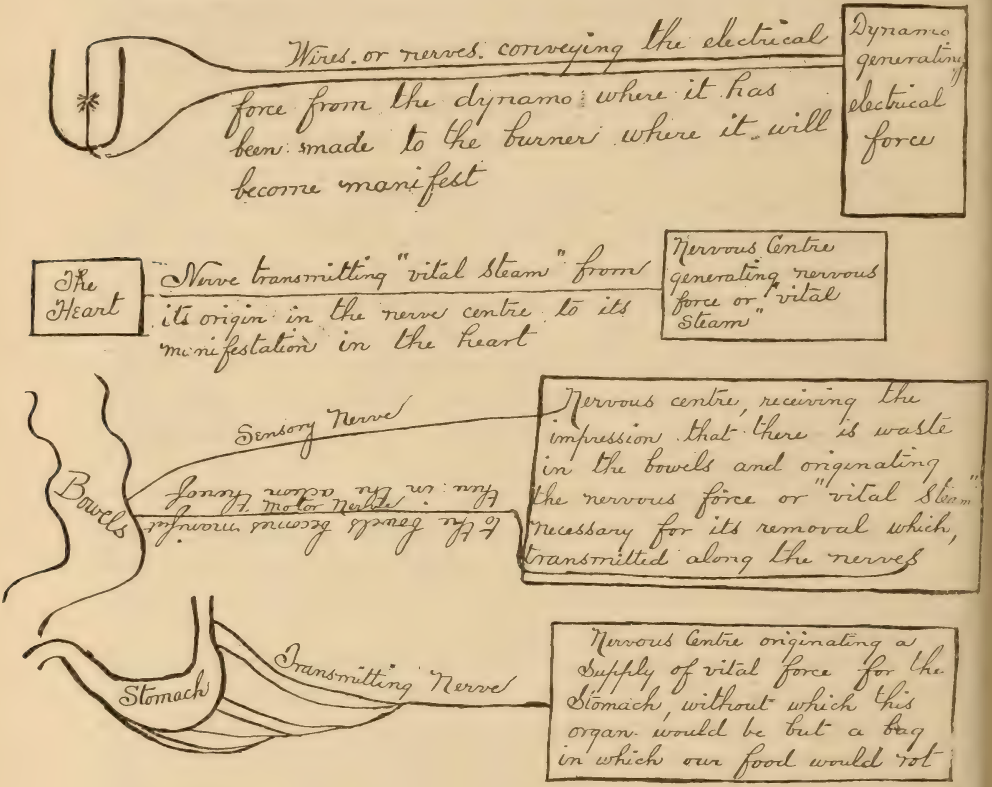
Patients come into my office complaining of all kinds of ill health; of constipation; of dyspepsia; of palpitation of the heart; of shortness of breath; of general weakness; of irritability of temper; of loss of appetite; of the thousand and one ill-feelings that may portend anything and everything. I examine the urine and find therein the *débris* of a broken-down nervous system. I prescribe for its restoration and these symptoms disappear.

A lady from Baltimore, whom you would remark on the street as the picture of health, comes into my office complaining of an assortment of trivial symptoms, the aggregate of which makes life miserable. I, mentally, classify her as a *crank* who has a passion for doctors and drugs. As though reading my thoughts, her husband, who was present, remarked, "Our doctor at home is one of the leading physicians; I believe that he thinks my wife is a crank and that there is nothing the matter with her; but I know that she is not well; I know that she is very nervous." I asked for a bottle of urine: there it was again, full of nervous *débris;* appropriate treatment and recovery.

The constant repetition of such experiences could not but deeply impress me; they were not proving nor disproving any preconceived theory; they were simply facts, *plain*, *stern*, *undeniable* facts. Could I now find a theory that would fit into these facts? I think that I have.

The human body is a collection of organic matter; the lungs, heart, kidneys, liver, stomach, bowels, spleen, pancreas,—all the parts and organs of the body are collections of organic matter; they are all essential to life and health, but not one of them possesses in itself the power of life. Life resides in the nervous system; every part and every organ of the body is supplied with nerves; the nerves are but transmitting wires, so to speak. Nervous force is life; nervous force is generated in the nervous centres, in the brain, the spinal cord, and the nervous ganglia scattered everywhere throughout the body. Every organ may be healthy, but if there be not a bountiful supply of nervous force of good quality, none of the vital functions will be properly performed, *including the function of resistance to disease.*

Referring to our illustration, to make the matter clear, let us suppose an arc light with all of its parts in good condition ; a perfect dynamo half a mile away and conducting wires between ; start the dynamo into action and a brilliant illumination results ; but if the dynamo be worn out, but a feeble light will flicker, even though the burner and the wires be in good condition ; while, if both dynamo and burner be out of order, the result will be most dismal.


Wires. or nerves. conveying the electrical force from the dynamo: where it has been: made to the burner where it will become manifest
Dynamo generating electrical force
The Heart
Nerve transmitting "vital Steam" from its origin in the nerve centre to its manifestation in the heart
Nervous Centre generating nervous force or "vital Steam"
Sensory Nerve
Bowels
A. Motor Nerve
to the bowels become manifest
Nervous centre, receiving the impression that there is waste in the bowels and originating the nervous force or "vital Steam" necessary for its removal which, transmitted along the nerves
Stomach
Transmitting Nerve
Nervous Centre originating a supply of vital force for the Stomach, without which this organ would be but a bag in which our food would rot

To apply this to the human body : if the organs be healthy, and if a good nervous system generates a sufficiency of good nervous force which good nerves convey to the organs, perfect health and the *power* of *resistance to disease* must be the result ; but if the nervous system be so run down that it cannot generate this force, even though the nerves may be capable of transmitting it and the organs may be capable of utilizing it, a departure from the healthy standard and a susceptibility to the causes of disease would seem to be the logical result.

The electric light burner makes manifest a transmitted force that is generated some distance away; the human organs also make manifest a transmitted vital force that is generated some distance away in the nervous system.

Now, we know that the life of the body consists of a constant building up and breaking down of the constituent parts of the body, and that in adult life the closer these two processes balance each other the more perfect will be the phenomena of life. The nervous system is no exception to this general rule; it is constantly building up and breaking down, and if there is an exact balance between the two, the amount and quality of nervous force generated will be just that which is requisite for healthy life; while it must be obvious that if the breaking-down process is in excess over that of the building up, that such a broken-down nervous system cannot generate the requisite quantity and quality of nervous force.

Consider for a moment the phenomena of inflammation, one of the characteristics of which is the presence of an excessive amount of blood in the vessels of the part that is inflamed. The calibre of blood-vessels is governed automatically by nervous force, so that just the requisite amount of blood is allowed to circulate in the vessels of any given part; hence, if too much blood is present in any part of the body, it must be that the nervous force regulating the vessels of that part is deranged, and, conversely, if the nervous force regulating the function of any organ or part be deranged, it must be evident that such organ or part is in danger of derangement itself.

What steam is to the locomotive engine, nervous force is to the human body; a person whose nervous system is generating a sufficiency of nervous force of efficient quality cannot be sick, unless some of his organs are deranged, while if this nervous force be deficient in quality or quantity he cannot be well, even though all of his organs and parts may be healthy. Hence a person whose nervous system is "run down" is not only especially liable to chronic disease of any organ, but if the germs of any contagious disease enter his system he will fall an easy prey to them, because he will not have the "vital stream" or nervous force to enable him to combat and conquer them.

Any physician will tell you that a sound nervous system will help its possessor to withstand the inroads of disease of any kind, and years of experience have convinced me that no matter what disease I may have to contend with, my results have always been the best when I have directed my efforts to sustaining and building up the nervous system, thus increasing the amount and improving the quality of the nervous force that it generates.

Does not this theory fit very snugly into the facts stated in the beginning of this article? Remember that a theory did not develop the facts, but that the facts forced themselves upon my notice, and that it was only when the facts had accumulated to a convincing degree that I sought for a theory fitted to them.

So firm has become my belief in this general influence of the nervous system that I now rarely fail to include an examination of the urine for nervous *débris* in the examination of my patients, and it is really astonishing how often it is found, even in those who offer no other evidence of nervous derangement.

It seems to me that if we rightly estimate the value of nervous force, or "vital steam," it will not be difficult for us to understand how a deficiency thereof will allow us to be dyspeptic, or constipated, or bilious, or to suffer from any of the lesser or greater ills of an incompletely working organism.

The practical hygienic application of these facts and this theory is to be watchful that the nervous system is kept in good condition; that he whose nervous system is "run down" is not only sure to suffer from many minor diseases, but that he is in constant danger from the causes of the greater diseases that are constantly surrounding him.

"Heart-failure," about which we hear so much nowadays, is an interesting and striking illustration of the bad results of too little "vital steam," or nervous force. There was a time when I did not like this expression, when I did not think that it was correct, because I could not realize that the heart could cease its action, save on account of disease of this organ itself or of a general fatal exhaustion of vitality; but my later experience teaches me that the heart is very much like a steam-pump, and that if it be not constantly supplied with an abundance of steam of good quality, that it is liable to stop short, even though the heart itself and all the other organs may be perfectly sound. That which thus results fatally, this diminished production of steam, when applied to the vital pump, the heart, may, when applied to any other organ, produce disease or derangement thereof.

Now, what I have just said has more particular reference to a *prostrated* condition of the nervous system ; but, as I continued my observations and my experience became more extensive, I was confronted with a diametrically opposite condition, one in which the nervous system was, so to speak, too good ; a condition of exaltation rather than of prostration, and in this condition do we also find functional derangements, but of a very different kind.

My experience causes me to believe that many cases are treated as nervous prostration that are, in reality, nervous exaltation, and that such cases when so treated are not only not benefited, but are made absolutely worse. I will have more to say of this later on.

It has been truly said that there is no physiological necessity for death ; contrary as this assertion is to common sense and to our knowledge of the inevitable termination of every human life, it is, nevertheless, physiologically correct.

As already stated, life consists in a constant building up and breaking down ; our bodies are continually changing ; every act of life entails the consumption of the tissue engaged in such act and necessitates its replacement by the new tissue elaborated out of the food that we eat. If, then, at the beginning of a day, it were possible to know just how much tissue would be consumed during that day, and if it were possible to know just how much food would be required to replace this waste, and if we consumed just the requisite amount, digested and assimilated it, we would be no older at the end than at the beginning of the day, we would be just the same, and so would it be at the end of the week, month, or year ; we would be always the same ; we would never grow old ; we need never die if this exact balance between waste and repair could be maintained ; this is in accord with the teachings of physiology, from which we fail to draw any reason why these processes of waste and repair should ever cease.

Of course, we know that everlasting life is an impossibility, but from this little physiological fancy we can draw a valuable lesson. Understanding, as we do, that life consists in a building up and breaking down, we are prepared to understand that in proportion as these two processes are properly related, the one to the other, so will be the health of the individual.

Up to the age of maturity the building-up process must, obviously, preponderate over that of the breaking down ; during maturity they should balance, while in old age the breaking down will exceed the building up.

This is the natural course, and, if it holds, health is the result. But these processes do not occur by accident, nor are they controlled by themselves; again must we fall back upon the nervous system as the originating and controlling influence in these changes. Very many functions are concerned in these changes; ingestion, digestion, assimilation, circulation, absorption, disintegration, and elimination are all factors in the processes of waste and repair, but each one of these functions is dead of itself, and is capable of action only when vivified and controlled by an influence generated in and transmitted from the nervous system; hence, is it not transparently obvious that a normal nervous system is a prerequisite of normal waste and repair.

But although the originating and directing influence, the nervous system itself is not exempted from this physiological law of waste and repair; the nervous system itself is continually building up and breaking down just as are all the other organs and parts of the body. I recognize two diametrically opposed abnormal states of the nervous system:

(1) That in which the breaking-down process preponderates over that of building up; here we have true "nervous prostration."

(2) That in which the building-up process preponderates over that of breaking down, and here we have true "nervous exaltation."

Between these two marked extremes we may have an almost infinite variety of shades and modifications, tending towards the one or the other direction.

Now, to me, it is very obvious that if the nervous system generates vital force (or "vital steam," as I like to call it), and that if a nervous system in which waste and repair are well balanced will generate the requisite quantity and quality of "vital steam" to properly run the human machine, it is obvious, I say, that a nervous system that is *wasting* in excess will make too little, while a nervous system that is *building* to excess will make too much "vital steam" for the healthy demands and requirements of a healthy body; therefore, in either event the body will not be in a condition of health.

This is not theory; facts testify to its truthfulness.

Patients come to me complaining of symptoms that are all indicative of prostration; of general prostration, I mean, of stomach and bowel prostration, of mental prostration, of muscular prostration, of prostration of each, all, and every organ and part of the body. I examine such patients and invariably do I find a broken-down nervous system; invariably do I find evidence that the nervous system has lost its balance and that it is wasting more than it is repairing. Again, patients come to me complaining of symptoms of exaltation; no evidences of prostration; stomach, bowels, brain, all the organs, in a state of activity; able to walk miles without exhaustion; no evidences whatever of prostration, but complaining of a feeling of uneasiness, of unrest, of inability to keep quiet, of restlessness and "nervousness;" here, upon examination, I do not find evidences of a broken-down nervous system; on the contrary, I discover the balance lost in the other direction and that repair is exceeding waste.

Just here I would enunciate a singular fact that I have observed, because it contravenes the usually accepted idea. We hear a great deal of "nervous prostration" and very little of "nervous exaltation," and when we speak of a person as "nervous" we generally mean, and are generally understood to mean, that the nervous system is in a state of prostration. Experience teaches me that this is not correct, that the so-called "nervous" person is one in whom we will find "nervous exaltation," not "prostration," and that upon examination it will be found that the nervous system of the "nervous" person is, as a rule, building up more than it is breaking down.

Not infrequently one will find a curious condition in which there seems to be a combination of the two conditions already described, in which we have both nervous prostration and nervous exaltation. This condition is very serious, for while there is, in reality, prostration of the nervous system and prostration of every organ and function as a consequence thereof, there seems to be, so to speak, a frantic, spasmodic, desperate desire on the part of the nervous system to do that which is demanded of it, though, in so doing, it is still further exhausting itself. It is in these cases that we have sudden and often fatal collapse. Such persons are on the brink of a precipice, from which the slightest shock may precipitate them into the chasm below; they are like unto the dying candle that flares into unusual brilliancy just before total extinction. I have had many cases under my care that had been treated by eminent specialists in nervous diseases for years without benefit; they would come to me claiming that they were suffering from "nervous prostration;" they had been treated for such and had not improved. Upon examination, I would find this condition of "nervous exaltation" that I have been describing, a condition diametrically opposed to that of prostration.

No wonder they had not improved; no wonder they were disgusted with doctors and drugs; nervous systems, already "too good," too high-strung, too active, had been treated as *prostrated* nervous systems; they had been toned up and built up, with the inevitable result of making matters worse.

As I write I recall the case of one of the wealthiest and most prominent citizens of Philadelphia who came to me complaining of stomach trouble, of indigestion. He had accumulated an immense fortune by years of close attention to business; he was of an active, vigorous, "nervous" temperament, but had retired from active business. He presented this curious condition. Ordinarily, he considered himself a perfectly healthy man, all of his functions working satisfactorily; but if he attended a dinner-party (and his social prominence made this frequently necessary) and was called on to make a speech, the next day he would find himself in a condition of almost uncontrollable "nervousness," and for a week or ten days he would suffer from dyspepsia. This man had absolutely no cause for worry. His family physician assured him that his "nervousness" came from his stomach, and that when his stomach trouble was corrected his nerves would be all right, and treated him from this stand-point for some years without result. Reading some of my articles, and believing my views to be correct, this gentleman came to me. I conceived a diametrically opposite view of his case, contending that his stomach trouble was dependent upon the condition of his nervous system, and that when this had been corrected his stomach trouble would disappear.

Remember that, in this case, the impression upon the nervous system (the request for public-speaking from a highly wrought, nervous, notoriety-shunning man) always antedated the stomach trouble, and that when the nervous system was not so jarred, or disturbed, the stomach did its work satisfactorily. Examination revealed a case of "nervous exaltation." Upon the slightest provocation the nervous system was ready to make too much "vital steam," as the result of which all the organs and their functions were thrown into a tumult, which he referred in an especial manner to the stomach. Instead of "toning *up*" I "toned *down*" this nervous system, with the happiest results.

That my views in reference to the all-pervading influence of the nervous system are correct the success of patent medicines empirically proves.

The great majority of the most successful patent medicines are either nervous stimulants or nervous sedatives, cutely designed to meet either "nervous prostration" or "nervous exaltation;" but it is, of course, only chance whether the right medicine will be used in the right case; many of these medicines, undoubtedly, possess merit if used in appropriate cases, but, taken as they are indiscriminately and without a previous diagnosis, it is, as I have said, only chance whether they will do good or harm.

Being designed to act upon the whole body, upon every organ and function, through the agency of the nervous system, upon which their influence is exerted primarily, it is impossible for them not to produce an effect upon the body at large; but whether this effect will be beneficial or injurious is entirely a matter of chance, depending upon whether one has happened to hit upon the remedy indicated for, and suited to, his particular condition.

I think that there is very little question nowadays but that mind or intellect or intelligence is a material product; we cannot see, touch, smell, taste, or weigh it, nevertheless its production entails the consumption of the brain tissue that has been concerned in its production; that which is at this moment visible, tangible, real brain tissue has disappeared in the next moment, and as the result of this disappearance of tissue some thought or some mental action has been produced; the solid tissue has been converted into, or has given origin to, invisible mentality. This fact is admitted by all physiologists.

Electricity is doing wonderful things in these days; but what is electricity? You cannot see it, nor taste it, nor weigh it, nor measure it; it is a force, but an invisible, intangible one. The machine that produces it and the results produced by the electricity are visible to, and appreciable by, our senses, *but the agent itself, the electricity, remains a mysterious and incomprehensible force.*

So mind, intellect, intelligence is an invisible, intangible, imponderable force generated by the brain; the organ producing, and the results produced by, intellect are visible to and appreciable by our senses; but *the agent itself*, *the mind or intellect*, *remains a mysterious and incomprehensible force.*

I do not mean to assert that electricity and vital force, or "vital steam," are identical, because I cannot prove it; but I do admit that, as my experience grows, I see more and more reason to think that they are intimately related.

The human body presents many points of resemblance to a possible combination electric machine, with the brain and nervous ganglia for the dynamo, the nerves for the transmitting wires, and the various organs and parts for the many different electrical manifestations that could be made from one sufficiently powerful central dynamo.

We have already seen that vital force or "vital steam" is generated in the nervous system and is transmitted therefrom to its points of manifestation by means of nerves or *wires*, and it is a fact that these nerves are *insulated*, just as are the electric wires, the conducting portion of the nerve, the axis cylinder, being encased in an outer covering.

Let us pursue this resemblance a little further. To the human body the nerves really are what the electric light, telephone, and telegraph wires are to the life of a community. It is the function of the nerves to receive and transmit impressions, and to receive and transmit directions or commands. I have often fancied that we might really consider the wires of the telephone as an artificial prolongation of the natural nerves of man. A person calls you up on the telephone and says something; what he says is conveyed along a wire to your ear; then it continues along your nerve of hearing to your brain; your brain recognizes and understands the meaning of the words that have been spoken; your intelligence, in your brain, formulates an answer and directs the nerves running to the organs of speech to convey its commands to these organs to speak this answer, and your words, expressing your thoughts, are conveyed over the telephone wire to your auditor, to be received by his nerves of hearing, in contact with the wire, conveyed to his brain, and here understood.

The telephone machine and the telephone wire, while essential parts of this performance, cannot hear what has been said, in the sense of understanding it, any more than can the ear of man;

but the machine, like the ear, and the wire, like the nerve, are the agencies through which impressions can be conveyed from one person to another, or from one portion of the body to another, and through which the commands or directions, or motion, or activity that may be incited, or excited, by these communications or impressions, may be returned to the appropriate spot. The most trivial and the most vital phenomena of life depend upon the nerves.

Suppose a fly lights upon the end of your nose ; at once you brush him away and think no more about it. But, reflect now for a moment, and see what has happened, and how intricate has been this seemingly trivial incident. The fly lights upon your nose ; his delicate little feet make an impression upon the terminal ends of the sensitive nerves in the papillæ of the skin ; this impression, slight as it is, is telegraphed along the nerve to the brain, with the rapidity of lightning, and the brain becomes aware of the fact that there is a fly on the end of your nose, just as the ringing of the telephone bell makes you aware that some person at a distance wishes to speak with you. If the impression made by the feet of the fly is pleasant and agreeable to your brain, no action results, and the fly is allowed to remain until he feels inclined to move away. But if the impression made is unpleasant, your brain originates a command, which is transmitted along the nerves to the muscles of your arm ; they are set into motion and the fly is brushed away. If there had been no brain, you would not have been cognizant of the presence of the fly, and if the nerves had been deranged so that they were incapable of conveying commands, you could not have brushed him away.

This was a voluntary act ; but so, also, are all involuntary actions dependent upon, subject to, and controlled by the nervous system. You get some pepper, or some dust, into your nose and you sneeze. The irritant has made an impression on your nose, this impression is conveyed to the brain, or to some central nervous ganglion ; the command is originated and telegraphed to a great and powerful muscle, the diaphragm, located below the lungs, to contract suddenly, forcibly, and spasmodically, so that it will drive the air out of the lungs through the nose with great force, dislodging and carrying before it the irritating pepper or dust. Sneezing is *involuntary ;* one cannot voluntarily truly sneeze, nor can one voluntarily suppress a sneeze, if the exciting cause is present and the nervous system is in condition to respond to the demand. In fact, it has been said that sneezing is an evidence of health, as it has been, empirically, noted that sick persons seldom sneeze.

So in like manner all the involuntary functions, all the vital functions,—digestion, nutrition, circulation, elimination, etc.,—are all dependent upon the nervous system for their performance; hence, again, is it not eminently logical to *contend that a normal nervous system must imply normal function, an abnormal nervous system must entail abnormal function, while even, when organic disease of some organ exists, the measure of function to be expected and derived therefrom will be in direct relation to the normal or abnormal condition of the nervous system.* This is a proposition upon which I have reflected, and upon which I have based my practice for many years, and as each day brings additional proof, I am daily more and more convinced that I am right.

Theoretically, this proposition is obviously logical; practically, experience proves it; what more could I ask?

Lest I may be misunderstood I would state right here that I do not hold that all disorders or diseases should be attacked and cured *solely* by treating the nervous system; this would be nonsense. If my horse is tired and hungry, my logical course is to put him in the stable to rest, and feed him; but it may be necessary to use the whip, spur, or coaxing to get him to the stable. So, while I contend that the only rational, logical way to cure functional and to ameliorate organic disease is to restore the nervous system, as far as possible, to a normal condition, I yet fully recognize, and freely admit, the necessity of treating the particular disorder or disease that may call for assistance, of *helping* this particular disordered function, until the nervous system has been so regulated that it can naturally take care of it.

If it is impossible for the man to have his soiled shirt washed at once, I believe in covering it up (so that he will not be constantly mortified, annoyed, and harassed by this ever-visible, evident filth) until he can have it washed.

To go back to the question of the material aspect of mentality (because it has an important bearing upon the ideas that I am enunciating), I would remind you that the quality of a product will depend largely upon the integrity of the machine that has produced it. Perfect raw material and a perfect machine, perfectly cared for, must give a perfect finished product. A perfect brain, perfectly nourished and perfectly cared for, must produce perfect mentality ; it can produce nothing else. Conversely, an imperfect or abnormal brain must produce abnormal mentality. Can this proposition be denied ?

This abnormal mentality may vary in degree from a slight misconception of the significance of facts, on the one hand, to positive insanity, on the other.

To apply this fact. I am frequently confronted with this curious condition : I find that those whose nervous systems are deranged will often seem to lose the power of logical reasoning with themselves about themselves, though perfectly capable of logical reasoning in their relations with others. Impressions arising from within the individual are not correctly interpreted, while those from without can be logically reasoned upon. This is a most interesting and curious fact ; it has a most important bearing upon the correction of perverted function ; and it is here that the personality of the physician comes into play, for it is hopeless to expect to accomplish any good in these cases until you have restored to the individual the power of logically reasoning with himself about himself, and this cannot be done with drugs ; it can be accomplished only by the physician who will patiently and perseveringly set to work to develop this latent, slumbering, abeyant faculty. Drugs will help, they will give us the mechanical and the chemical influences, but the all-important psychical influence, without which the others will not avail, must be furnished by the personality of the physician.

A few illustrations will make my meaning very clear.

A young man, whom I had examined and found perfectly healthy six months previously, has for two months passed from twelve to fifteen hours daily in-doors, bent over a desk, writing ; he enters my office with the announcement that his kidneys are diseased. Upon inquiry, I elicit the facts that he is not feeling well and *has pain in his back ;* he has, illogically, jumped to the conclusion that this pain in his back means diseased kidneys, because his abnormal nervous system, the result of his long confinement, anxiety, hard work, and lack of exercise is not capable of correctly reasoning that this pain is most likely due to his two months' bent position, which has fatigued the muscles of his back ; he *jumps* to the most serious interpretation of this pain instead of reasoning out the most logical explanation ; yet he is perfectly capable of attending to his business and is perfectly logical in his relations with everybody but himself. An examination fails to reveal any trouble with his kidneys, or, indeed, with any other organ, save the nervous system, which is in a state of prostration; the nervous system is built up, the latent reasoning faculty is developed, and all thought of kidney trouble vanishes.

A gentleman at the head of a large business in Philadelphia, a business requiring great mental acuteness, a man whose mind is fully equal to all the demands made upon it, comes under my care for stomach and liver trouble. Every now and again, during the progress of the treatment, he has attacks of fluttering of the heart, and summons me in haste, confident that he is dying of organic heart-disease; when these spells are relieved, or pass away, he forgets that he has a heart. He cannot reason with himself that these attacks are but functional, dependent upon a disordered stomach, liver, and nervous system, but the moment he is made aware of the existence of his heart, by its conscious action, that moment does he illogically *jump* to the conclusion that this organ is irremediably diseased. Restoration of the nervous system to a normal condition restores the integrity of function of the liver and stomach, and these illusions vanish.

A gentleman comes to me with the history of spinal disease, for which he is wearing a steel jacket; he claims that he cannot walk, as he is sure that he will fall down in the attempt; he is dizzy because his cerebral circulation is sluggish; but he misinterprets and magnifies the significance of this dizziness; his stomach is out of order; bowels costive; he cannot sleep; everything is out of order; he has been away from his office for one year, is confident that he is doomed, and is in the lowest depths of melancholy. Examination fails to reveal any organic disease; there is no spinal trouble, but there is undoubted evidence of a very greatly prostrated nervous system. In addition to appropriate drugs, this man is made gradually to believe that he is misinterpreting the significance of his symptoms; as his nervous system slowly approaches the normal, so does he slowly develop his logical faculties, and becoming daily more and more capable of reasoning correctly with himself about himself, is ultimately able to place a correct estimate upon the significance of his symptoms. Within three months he is back in his office, forgetful that he was ever sick, *and is now riding a bicycle.*

A lady sends for me in haste to cut her tonsils, claiming that she is choking to death. I find the tonsils very slightly enlarged, but the nervous system very decidedly prostrated. Restoration of the nervous system drives away all thought of the tonsils. A lady sends for me to remove a bug from her ear, and another lady has a bone in her throat. I fail to find either bug or bone, but I do find two very decidedly *exalted* nervous systems that have misinterpreted and magnified the impressions of a bug impinging on the ear as it flew past, and of something hard and sharp irritating the throat as it passed down. I subdue these exalted nervous systems and we hear no more of bugs or bones.

So on I could indefinitely multiply actual occurrences to prove that the victims of a disordered nervous system are not capable of correctly estimating their symptoms, and that we cannot hope to benefit these cases unless we patiently, perseveringly, and systematically set to work to develop this latent faculty. The physician, who is not possessed of a goodly stock of patience and perseverance had better not undertake the management of such cases; a hurriedly written prescription and a few words of advice will result in dire failure. Personal interest, an intense and earnest and self-consuming desire and determination to benefit your patient, a whole-souled resolution to bring out this latent logical power, backed by unfailing patience in the face of repeated disappointment, all these are absolutely necessary to the successful management of these peculiar cases. Yet the satisfaction that one feels in having finally conquered these apparently unconquerable cases is infinitely great and can be fully appreciated only by one who has so triumphed.

Are these people of whom I have been writing *cranks?* Are they *hypochondriacs?* By no means. As I understand it, a "crank" or a "hypochondriac" is one who imagines sickness without any foundation; those of whom I write have plenty of foundation; the very best of foundation, in the shape of a disordered nervous system which makes it an absolute impossibility for them to disabuse themselves of these erroneous conceptions. From the bottom of my heart I pity and sympathize with these poor creatures, whose imperative misconceptions are, to them, intense, terrifying, torturing, and absolutely uncontrollable realities, and I sincerely hope and trust that what I have written may be the means of causing others to exhibit more patience and sympathy towards these poor invalids, who are fully deserving of the greatest possible sympathy.

In fact, as my experience grows, the less am I inclined to believe in the existence of true "cranks" or true "hypochondriacs,''—that is to say, I believe that very few human beings complain without some cause. It is not natural for one to complain without some cause. The instinct within us would tend rather towards expression of health than of disease, unless there was some cause to suggest to us the idea of disease ; unless there is something wrong somewhere to suggest it, the mind would not conceive the idea of disease ; every mental conception must have an exciting cause ; children never complain of sickness without cause, and I firmly believe that this same assertion will apply to adults. Of course, there are some morally crooked individuals who will designedly complain when there is no cause, having some selfish end in view to be accomplished thereby ; but there are very few such. Follow up the history of so-called ''cranks'' and '' hypochondriacs,'' and in most instances it will be found that they will ultimately develop some serious disease, in many cases dying suddenly.

I recall just here the case of a lady of about 45 years of age, who was always complaining of not feeling well ; finally, no one paid any heed to her constant complaints, when suddenly she was seized with convulsions and died without ever regaining consciousness. No ; I hold that very few persons complain without cause, and that it is oftentimes a fatal error to ignore the constant complaints of those whom we do not consider sick ; many so-called '' cranks'' are martyrs to duty, keeping up and going about when others, with less will power, would be laid up in bed.

Now, it seems to me that we have good reason to believe that a disordered nervous system is at the root of all functional disorders, and that the rational way to treat such disorders is to restore the nervous system to a normal condition.

But, how is it with organic disease ? What is organic disease ? The expression ''organic disease'' implies some change in the organ affected, as the result of which it is incapable of performing its full measure of function even though the nervous system may be capable of supplying it with an abundance of good ''vital steam.'' The dynamo may be working to perfection and the conducting wires may be all right, but if some part of the burner is wanting or defective the light will not be manifest. So the nervous system may be working to perfection, yet if the kidneys, or the heart, or the lungs, or the stomach be the seat of organic disease it will be impossible for them to thoroughly do their work ; just as it would be impossible for a bucket with a hole in the bottom to hold water. It is unnecessary to our purpose that we should enter into a discussion of the various forms of organic disease, it being sufficient to say that organic disease incapacitates the organ so diseased just in proportion to the extent to which the disease has advanced. But is it not obvious at a glance that organic disease cannot exist without functional disorder of the organ so affected ; function means duty ; a diseased organ obviously cannot perform its duty ; hence it must be functionally deranged ; since the nervous system presides over function ; since without the power or force, generated by the nervous system, function is impossible, it must be admitted that the nervous system is an important factor, at least in the control, if not in the production, of organic disease.

There is unquestionably a close relationship between functional disorder and organic disease ; an organ that is functionally deranged for a long time will become ultimately organically diseased ; long perverted function must eventuate in organic disease ; hence, if a disordered nervous system is the cause of perverted function, that eventuates in organic disease, we cannot deny that the disordered nervous system has been the first cause of the organic disease, and that if this nervous system had been corrected in time the organic disease would not have been produced.

One of England's greatest surgeons, Mr. Jonathan Hutchinson, has written most intelligently of what he is pleased to call "the pre-cancerous stage of cancer," contending that there is a very early period in the history of every case of cancer, a time before the system has become implicated, as it were ; a time when the disease is local ; and he claims that if, by operation, the local disease be removed at this time, the fatal tendency of cancer to recur will be obviated, and a cure, permanent and lasting, will result. Unfortunately, the victim of cancer in the early stages fails to consult the surgeon ; the matter is overlooked or neglected until the system has become involved ; an operation is then performed, the local disease is removed ; but, as the system has become implicated, the cancer recurs at the same or some other point, and the case steadily progresses from bad to worse ; a cure is out of the question. What is true of cancer is also equally true of all chronic organic diseases. Organic disease does not spring full-fledged into existence in a day or a week ; it is a slow, insidious, gradual process.

By a chronic organic disease we understand a long-continued *nutritional* derangement of some vital organ, as the result of which it grows gradually less and less able to perform its duty in the maintenance of health and life. The progress of chronic organic disease is, of course, very gradual. The departure from the normal condition is, at first, infinitesimally slight, so trifling that its results are not appreciable to the patient. Slowly the derangement increases, as more and more of the organ becomes involved, and now the effects of the imperfect working of the affected organ become manifest. Symptoms evident to the senses are present, and now the chronic disease has produced ill health ; the human machine is not perfect ; one part of its mechanism is out of order ; the harmonious working of an interdependent combination of organs and parts is not present ; the faulty work of the diseased organ is impressing its baneful influence upon the whole system. *But it must be ever remembered that a chronic organic disease will be well advanced before it will cause symptoms evident to the senses of the patient.* The law of tolerance and of compensation has thus far enabled the patient to withstand the *fatal* tendency of chronic disease ; but, as time goes on and the organic disease becomes more and more marked, as the affected organ becomes less and less able to do its work, as the system becomes more and still more profoundly impressed with the results of this imperfect work, the evident impairment of health becomes still more marked. The patient is now a chronic invalid, beyond the possibility of cure, and as the disease still further progresses there comes a time when it is impossible for the vital spark to longer burn, and death terminates the history of organic disease. Neglected organic disease can have only one history, that which we have described as a gradual transition from health to death.

But organic disease is essentially a disorder of nutrition ; the kidney, or liver, or heart, or lung that is in a condition of organic disease is so because the normal tissue, capable of performing the particular function of this organ, has been substituted by an abnormal tissue, incapable of doing this work. This is plain English, divested of all technicalities, but it is the whole truth in a nutshell. If, then, chronic organic disease is a nutritional derangement of the organ so diseased, and if all the phenomena of nutrition are dependent upon and controlled by the nervous system, how can we possibly deny the assertion that *chronic organic disease must necessarily imply a pre-existing derangement of the nervous system.*

I have already demonstrated that the organs are not capable of themselves of normal function ; is it not equally logical to contend that they are incapable of themselves of abnormal function ; they possess no power of *originating* either normal or abnormal activity ; they are capable only of making manifest a transmitted activity originating in the nervous system, and it cannot be denied that this activity will be normal or abnormal, will be healthful or diseased, just in proportion to the integrity or inferiority of the nervous influence that originates and controls it.

We have been taught to regard derangement of the nervous system as oftentimes the *result* of long-continued chronic disease of other organs, and in so teaching we have, I think, been putting the "horse before the cart." I have repeatedly had the opportunity of demonstrating the existence of disordered nervous systems in patients who had no organic disease ; they would drift away from me and, returning after variable periods of time, chronic disease of some organ would be found to have developed ; could we ask for more direct substantiation of the fact that derangement of the nervous system is the *cause* and not the *result* of chronic organic disease.

Remembering what has been said about the nature of organic disease and of the all-pervading influence of the nervous system, is it not most rational to claim that the most effectual way to retard the progress of the disease and to secure the greatest possible measure of perfection of function from the organ so diseased is to supply it with the best quality of nervous force, which can be done only by correcting the disordered state of the nervous system. Let us consider a locomotive that has been for some years in the care of a somewhat reckless engineer. His idea, his guiding principle, has been to "work his machine for all that it is worth," to get all the speed and work out of his engine that was possible ; he has not been wont to regard his beautiful machine as a something almost human, viewing it merely as a mass of iron and steel, of pipes and valves, of levers and cranks, of wheels and axles, so put together that the combined mass can pass over the surface of the globe at the rate of forty or fifty miles an hour. This engine has been driven and rushed, has been strained and twisted and jarred, has been jolted and burned, has been overheated and chilled, and has been neglected until suddenly, unable to stand the strain any longer, it blows up and all is over. The engine has not changed in a moment of time from a sound machine to one that is explosive because of defect; the process of deterioration has been very gradual; the locomotive has been really passing through a process of chronic degeneration of all its parts, a process by which they have been, daily and hourly, growing less and less able to do their duty, and finally the time has come when they can no longer hold together; a little extra strain is thrown upon them and an explosion follows.

So does the man. Little by little his organs depart from their normal state; little by little do they become less and still less equal to their work; the system, equal to almost all emergencies, endeavors to accommodate itself to this imperfect working of its organs, or parts, and, in a measure, succeeds in doing so.

The various organs, so far as possible, help one another, so that the defect in the organ that is primarily diseased may be to a certain extent compensated for by the extra work of the others. In this way the balance of health may be fairly well maintained for a while. But it is an unnatural health (if I may be allowed the Hibernianism), it is a health rather *in spite of* than *because of* the natural working of our organs. It is a health that is allowed to us because nature in her goodness is not anxious to strike us down. She will do all in her power to avert the fatal end. It is, so to speak, not a *healthy* health; it is a vicarious and a most *precarious* health. But, when we come to think of it, how rarely do we hear of a locomotive explosion when we take into consideration the enormous number of these engines that are continually in use throughout the world. True, because the engineer, as a rule, is a good physician. His knowledge, his experience, his trained eye, his intimate familiarity with what should be the perfect condition and working of his machine and of the slightest evidences of departure therefrom, enable him to detect the first evidences of disorder or the beginnings of chronic derangement in his machine. He carefully watches these changes, and, after a time, the period has come when he feels that his engine is no longer equal to the strain of long runs at high speed, which, if continued, he knows will be very likely to cause an explosion; it is not yet actually diseased, it is equal to many years of effective work, but the labor must be less severe than formerly; the engine is, therefore, no longer used for the through express trains; it is relegated to haul "locals," where the runs are short, the stops frequent, and the strain reduced to a minimum. For years the engine is of value, and now there comes a time when it is unequal to any more work, and it is discarded; but this period of inutility has been postponed many years by the intelligent forethought of the engineer.

Precisely identical is the case of man. I firmly believe that there are to-day millions of men and women, from 45 to 65 years of age, who are in exactly the same condition as was this locomotive when the engineer recommended its withdrawal from "express service,"—that is to say, they are not yet diseased, their organs have not yet commenced to degenerate, but they are just on the verge of commencing to do so. Prior to this age organic disease is not so common, and when it does occur it is rather because either of notoriously faulty habits of life or of lack of natural, inherent vital vigor; such, of course, is not invariably the case; but it may be accepted as an axiom, in order to bring more boldly into view the idea that when the great mass of human beings reach the age of 45 years it is very likely that certain changes will commence in their vital organs, infinitely inappreciable in their insignificance at first,—changes that can be so held in control as to constitute but the healthy, natural, inevitable molecular phenomena of the organs; or changes that may be so impressed and modified by improper and unnatural influences as to constitute the beginnings of chronic organic disease.

In other words, in plain English, that I may not be misunderstood, every human being from, say, 45 to 65 years of age, presents an organization that is *not inimical* to the development of chronic organic disease, while prior to this age, the very resiliency, so to speak, of a healthy person will make organic chronic disease an unlikely occurrence, the practical deduction from which is that while we should always be careful, the man who has reached 45 and wants to see 85 has reason to increase his care and vigilance.

That I may be clearly understood, let me again explain what we are to understand as a chronic organic disease.

Let us take a mirror, for illustration. The duty or function of this mirror is to reflect an image of whatever may be before it. If, on a damp day, this mirror be coated with moisture, it cannot reflect; every part of the mirror is intact, yet, because of certain conditions, it cannot do that which it is intended to do. Now, let us wipe the dampness from the surface of the mirror, and its function is at once restored to it; the mirror may be said to have been *functionally* deranged. Again, let us expose this same mirror to such influences that the quicksilver which coats its back is gradually eaten away; in a short time, as the quicksilver disappears, the image that is reflected is imperfect; this imperfection becomes more and more pronounced, until finally the mirror has absolutely and totally lost its power to reflect. The glass is there, its shape and form remain, its substance is intact, but it is no longer a mirror; it may now be said to be organically deranged, and it is no longer of any use for the purpose for which it was originally designed. If, when we first noticed that the quicksilver was being eaten away, we had looked for the cause and removed it, our mirror would have continued to reflect, not quite perfectly, but sufficiently well for all practical purposes.

So is it with the human being. The heart, for instance, which is after all but a fleshly pump, may become functionally deranged,—that is to say, because of certain influences acting upon it, through the nervous system, such as tobacco, tea, or alcohol, it may be, for a time, incapable of properly performing its duty; but when we remove the cause, the integrity of the organ is restored. But it may be that the normal tissue of the heart is undergoing change; the muscular tissue may be changing into fat; a certain amount of the muscular tissue may be carried away and deposits of foreign matter take its place. Such a heart is in a state of chronic organic disease, and just in proportion as the changes indicated have progressed will be the inability of the organ to properly fulfil its mission.

Therefore, a chronic organic disease always implies that the organ so affected is undergoing certain changes of structure that, in proportion to their extent, interfere with the ability of the organ to do its duty, and that, if unchecked, will ultimately so disorder the organ that it will become useless. The organ so diseased may or may not retain its normal appearance to the eye.

It must be impressed upon my readers that functional disorders are not such trifling ailments as the public are wont to believe them. Leaving out of consideration the fact that long-continued functional derangement may eventuate in organic disease, we must recognize the fact that sudden death from functional derangement alone is by no means uncommon. Thus we can readily understand that a functional derangement of the kidney (by which its ability to remove the poisonous results of tissue-metamorphosis from the system is abrogated) may, by allowing the system to be overwhelmed with the poison which it should have removed, prove suddenly fatal, yet after death the organ will present no evidences of disease. Such cases, of course, are not common, but I cite the fact to point the danger of belittling the significance of purely functional derangements.

If there is one law of nature that might be said to be more firmly established than another, it is that for every *effect* there must be a cause; without a cause an effect is simply impossible. The symptoms or signs of a disordered condition of the system are the effects, or, to be more accurate, they are the manifestations of the effects that must have been produced by a cause. We can accept as an undisputed fact the statement that the *typically* healthy human being will present no evident, sensible manifestations of the work of its various organs beyond the evidences of life that will be the result of their harmonious labor. To be more specific, the typically healthy man will be aware of the fact that he is alive, and that the very fact of living is to him an ever-present source of the greatest pleasure and satisfaction; but he will be ignorant (so far as any manifestations of their presence to his senses are concerned) of the existence of his heart, or his stomach, or his kidneys, liver, or brain. The functions of a typically healthy man are all performed unconsciously to himself; he lives; he loves to live, because it is a pleasure to him; but that his organs are laboring that he may live he knows not, because their work is unattended with any manifestations that will make their labor evident to him, save as to their results. Unfortunately, the *typically* healthy man is an extreme rarity; indeed, Dr. Carpenter, the eminent English physiologist, has been credited with the statement that Weston, the pedestrian, was the only *typically* healthy man he had ever seen. Luckily, however, for us all, it is not necessary that a man should have typical health in order that his life may be worth the living. Of course, the nearer one approaches to perfection of health the greater will be his measure of happiness in life, but such is not, as we have said, a necessity. However, the further one departs from the standard of perfection, the less pleasure and satisfaction will he find in life. This, I take it, is a self-evident proposition, that will be accepted as such without any further effort at demonstration.

Now then, to go back, if we accept the axiom that there must be a cause for every effect, and that the symptoms of disease or the disease itself is an effect, then we are prepared for the statement that every case of disease necessarily supposes a pre-existing cause.

Without a cause there can be no effect; without a cause there can be no disease. Like the masked figure at the ball, whose identity is concealed until the eleventh hour, so with chronic organic disease, the fatal changes are hidden under apparently trivial and harmless symptoms until well on towards the fatal termination. It is a fact that chronic organic disease is very slow, as a rule, in its course, yet if you will lay down this book for a moment and reflect upon the history of those of your friends who have died of chronic disease, you will incline to take issue with me and believe that the course of the disease is not so slow, because you will recall cases wherein but a few months, weeks, or, maybe, at the most, but a year or two have elapsed between the discovery of the presence of the disease and the death of your friend. But when you read this next paragraph you will know that the disease in question had existed, most likely, for years prior to the period of its discovery, and that at the time of its supposed beginning it was already very far advanced.

We are all familiar with the length of time that a fond parent will tolerate the most unfilial behavior on the part of a loved child; but after a time the most patient person will become annoyed beyond endurance; the annoyance will deepen into disappointment, then into anger; then comes estrangement, and it is now evident to the outside world that there is trouble in this particular family. The cause has been the misbehavior of the child, and the effect is the family estrangement. Not until the cause has been for a long time working does the effect become plainly evident to the outside world, but it has been steadily doing its work for a long time. Now kind friends come forward and endeavor to effect a reconciliation, but the estrangement has become too chronic; had the brewing trouble been recognized in its incipiency the kind services and advice of good friends might have banished the growing disagreement, and certainly would have delayed the sorrowful moment of final estrangement.

So with chronic organic disease. If the wise and intelligent physician will recognize that changes are taking place in some vital organ, and if he will carefully look for and ascertain the cause (which he will almost always find in a disordered nervous system) in the *beginning*, then can he surely either completely eradicate the trouble or at least materially postpone the date of fatal issue.

Such being the case, is it not clearly evident that the routine practice of medicine is very apt to frequently overlook the cause of symptoms—that is to say, the disease—that is causing them, and by so doing to allow many persons to suffer and to die who ought not in the course of nature to do either? By routine practice I mean the treating of symptoms. If a patient comes into my office and complains of inability to sleep at night, and if I prescribe for him bromide of potash, or chloral, or opium, I am practising by routine; if the next patient complains of a pain in the back, and I direct him to apply a porous plaster; if patient No. 3 is pale and weak and complains of fatigue on exertion, and I order him to take iron, I am practising medicine by routine. In each of these cases I will, undoubtedly, relieve my patient. No. 1 will sleep; No. 2 will lose his pain in the back; No. 3 will put some color into his cheeks and will feel stronger and more equal to exertion. But I am not really doing my patient any lasting good. If, for example, the symptoms of patient No. 3 are due to Bright's disease, the administration of iron may so tone up his system that he will not so plainly show the evidences of the disease, but the changes in his kidneys are going on all the same. I am masking the symptoms, but I am not curing the diseased condition because I have not looked for the cause. If, on the other hand, I make a careful, individual study of each patient; if I ascertain the exact condition of each organ and every part of the body; if I know just what organ is faulty in its action and the nature of the departure from its normal state, as well as the cause thereof, then am I in a position to intelligently direct the vessel of life into the proper channel leading towards the harbor of health and longevity.

Again, it is, I think, a mistake to regard chronic organic disease as an entity, so to speak. I think we fall into error when we consider that a patient has, let us say, chronic organic disease of the heart, and that the departure from health begins and ends here. With acute disease, of course, the affection can be, and generally is, strictly localized; but I do not think that the same can be said of chronic disease.

We must never forget that we may rightly understand ourselves, that the integrity of the whole organism depends upon the integrity of each individual part, the aggregation of which constitutes the organism. I can readily understand how one part may be deranged for a short period (as in acute disease) without reacting unfavorably upon another ; but I cannot understand how any organ can be the seat of a long-continued derangement without, in turn, interfering with the proper action of a second organ that has been dependent for its integrity upon the normal action of the first. Of course, as in every change of matter, there must be a point of original departure ; some organ must take the initiative in the departure from a healthy standard, and this point of departure is to be looked for in the nervous system. If we stand 100 men in a group and tie each one to the other, then if we knock one man down the whole 100 must fall ; first one falls, but as he is fastened closely to the second, he also must go, and with him pull down a third, and so on, until the 100 are prostrate ; so is it with the vital organs, I believe ; but if, when three or four men have fallen, some thoughtful person comes along with a knife and severs the thongs that bind them, the equilibrium of the remaining ninety-six or ninety-seven may be preserved. But if fifty have been dragged down by the fall of the first before the bonds have been severed, then will it be possible to save only fifty, and this remnant may be so weakened by the strain that has been put upon them that they may be unable to stand even when the cause which was dragging them down has been removed. So is it with chronic organic disease. If we recognize the seat, nature, and cause of the disease before it has progressed far, then may we not only be able to prevent the secondary implication of the other organs, but we may be able to nullify the evil effects of the disorder in the primary seat of the disease. But if the changes that are going on have been neglected until the condition has become general, until all of the vital organs have become implicated, then, indeed, have we good cause to despair of being able to render any efficient service to our patients.

(TO BE CONTINUED.)

A sound body lies at the foundation of all that goes to make life a success. Exercise will help to give it.

Varied light and brisk exercises, next to sleep, will rest the tired brain better than anything else.

Applied Christianity Essential to Health.

BY JOHN C. McCANDLESS, M.D.,

Chicago, Ill.

IN spite of all adverse circumstances there are many things in this life to cheer the heart of man, and if we judge of woman's responsibility in this, she furnishes more than the Eden episode. If it were true that God made woman because He couldn't be everywhere, we might truthfully say He did well, but when we judge of other surroundings in life, we can say He did still better.

We are conscious of having good nurses, good mothers, and good cooks, and when we are favored with a woman possessing all of the aforementioned virtues, we might diagnose the condition as being very good ; but are physicians conscious of all the resources at their command to alleviate human suffering, and are they rallying their forces to combat disease as effectively as the circumstances demand. Does our prophylaxis extend to the suppression of vice so far as the State clothes us with authority ? If not, are we truly physicians ? Are we maintaining the lofty standard of Hippocrates to strengthen the social fabric and limit the ravages of the moral lepers of society ? Or, like St. Luke, are we setting forth the gospel of peace, and the foundation for arbitration treaties as a prophylactic to the ravages of war ?

The gospel was to the Jews a stumbling-block, and to the Greeks foolishness, but to them that believe the power of God. There are many sceptics in medicine, but we are unworthy the name of physician if we refuse to honor the Great Physician and profit by his instruction.

Many regret the lack of the Bible in the public schools, and the influence of Christ from those who live corrupt lives, but the lack of a proper application of Scripture truth among professing Christians bespeaks more barrenness and misery than all other things the ungodly can do. When we learn of the many diverse views of Scripture teaching in reference to medicine alone, we might decide with the prophet of old that the whole head is sick and the whole heart is faint. Christ healed the sick, cleansed lepers, restored sight and hearing to the blind and deaf. Certainly this was essential to health, and so far as Scripture teaching is applicable to physical weal, I will endeavor to apply it.

I propose confining my remarks to bodily ailments consequent on the folly of man and the vanity of woman, and pointing out that the healthiest person or people are those who live closest to Christ and the teachings of Scripture.

The first inquiry of an intelligent physician is concerning the history of the patient's sickness. How long sick, etc. If the patient smokes, drinks, wears corsets, tight shoes, or entertains tortuous beliefs.

If the disease be transmitted from parent to child we speak of it as hereditary disease, and whether we be infidels or believers, we are forced to believe that the iniquity of the fathers is visited on the children. It were useless to say that a proper observance of the ten commandments is essential to health. All the laws God ever gave were to protect the rights of man and insure his loyalty.

The Creator who formed us is the same as He who made the Sabbath for man, and established the laws against murder, profanity, prostitution, etc. Being fearfully and wonderfully made, or, as Job puts it, ''clothed with flesh and hedged in with bone and sinews,'' to enjoy health we must respect the laws of the Creator, health being that condition of the body where the functions are performed regularly, harmoniously, and with ease. Is Christianity essential to this condition? Christianity teaches cleanliness, purity, precaution against vice, excess, drunkenness, etc. Can health be maintained without this teaching? No.

The teachings of Christ are authority for divine healing, and no person who believes in the creation of man should doubt His ability to repair. When we consider the operations performed on the human heart, and that all of His patients were made whole, we must admit Him to be above the ordinary physician.

In the first place, good health will depend upon strict observance of the laws governing health, and this necessarily implies moral laws. The scriptural instructions concerning food furnish us fundamental principles for the most rational dietetics. Plain food as against kingly meats and dainty dishes. Pulse and water to be preferred to wine and strong drink. Honey more desirable than adulterated sugar, if we would have something sweet. "A dinner of herbs and peace are better than a house full of sacrifice with strife." In short, plain food-stuffs minus the other stuff.

True, it is not what enters into the mouth that defiles the man, but it often makes him feel very uncomfortable. So we should guard the demand for food. If a hungry man craves bread, it would be cruel to give him a stone; not any more so than to give that which satisfieth not, such as beer, whiskey, and other noxious substances, ignorantly given as nutritious. Only such food as supplies proper nourishment to the body should be used. In so doing we obviate all risk of creating false appetites.

The Bible speaks of those whose god is their belly, and no doubt the often-kindled abnormal chemical fires consume more than the inflammable substances placed on the altar. That which men worship is most esteemed by them, and when we find people who live to eat, the application of the Scripture language is highly proper. All gods are not the same shape; some may resemble the shape of the calf, others the American dollar, and others be pot-shaped, etc. Little has been said about hog-worship, but if soulless corporations continue to grow, robbing government and citizen alike, if boodlers and rum-sellers go unpunished, it may result in setting up objects very much resembling the hog, and only righteous laws can stay the progress of such oppression.

The sense of hunger is satisfied with a proper supply of food, but more than a proper supply is injurious, as a healthy equilibrium will be disturbed from excessive activity in an organ and excessive waste follow. The teachings of physiology point to a necessity for rest as demonstrated in organic function, and all experience tends to prove that more work can be accomplished, and better health enjoyed by resting one day out of seven. There is a limit to human endurance, and if we fail to observe laws for rest, we must shorten the three-score-and-ten-year limit, and be without power to renew the lease.

It is the Creator we have to deal with concerning life and health, and being created with a Sabbath object in view the fourth commandment becomes a physiological law. How then can we free ourselves from moral obligations? No honest man desires to; neither will he accept a continental Sunday as a substitute. Be it remembered man was not made for the Sabbath, but the Sabbath was made for man. Like many other good things the

Sabbath has been adulterated, consequently it fails to have the desired effect in many cases.

Formerly men lived to upward of 1000 years. By a proper observance of the laws of health, other things being equal, men live to about 70. True, the average age of man is not half that period, but is reduced owing to violation of moral and physiological laws perhaps more than anything else.

The Bible asserts that the wicked shall not live out half their days, and if we will carefully consider who is meant by the wicked, it is very reasonable to expect such results, as our bodies are in subjection to the Creator's laws.

It was the Creator who animated the cells of Methuselah's body to live as long as he did, and if the Creator's laws are not violated, our years summed up amount to about threescore and ten. The cells are endowed with life for a purpose for that period of time, but here a similar retribution is meted out for the sins of omission as for those of commission, and to maintain the strength of manhood we must exercise the powers we possess, else the organs may become atrophied, so it is not inconsistent with health to earn our bread by labor and toil, and through this we obtain a more perfect rest and sleep that is much sweeter than that which is secured with an indolent life.

No logical reason has ever been given for the use of tobacco. Scripture records that when the good man slumbered and slept the evil one came and sowed tares. So when we find a man whose heart is full of tobacco and bitterness, we have an instance of the evil one's tare sowing.

Christ went about continually doing good, and only Christian activity and righteous laws will save the boys from the evil one's tare-sowing,—rum and tobacco. Here we have applied Christianity essential to health. Every intelligent person knows that tobacco is a poisonous narcotic, damaging and dangerous to heart and health ; so dangerous that it is almost impossible to get freed from the habit, and impossible to escape the effects. A gentleman informed me that he has smoked all his life and it has never done him any harm ; that he has always enjoyed good health ; but the odor he exhales is evidence against him. His three children suffer from functional heart-disturbance and are unable to endure ordinary mental work. The number of such cases are legion, considering the amount of suffering entailed by the parent's use of tobacco. It is cruel and wicked to permit any man who uses the weed to become either husband or father,—to bring children into the world suffering for the father's evil habits.

Is it true that a man can smoke or chew tobacco without doing himself any harm? No, it is not true. The first time a man uses tobacco he knows it does him harm. Solomon says, "Can a man take fire in his bosom and not be burnt?" Any intelligent person can answer that question, as experience makes it plain to all that fire will burn. It is a destructive agent to living tissue, and so is tobacco. The tobacco heart and ruined nerves attest to the destructive properties of tobacco; also the effects observed by the aid of the microscope in the direct application to the tissue. The question of using it in moderation is not to be entertained for a single moment. A coal of fire burns in proportion to its size, a smaller coal will do the same.

It seems necessary for me to state that applied Christianity is against the use of intoxicating beverages. The wise man has said, "Whosoever is deceived thereby is not wise." Simply a man is not wise who takes that which is injurious to his life or health. But I again repeat, we need more than rest under the present circumstances; in fact, nothing short of the law of God and Christ's teachings can secure and maintain health. The beneficial effects of a merry heart on the health is an established fact, as present experience will corroborate. Does the merry heart do as much good to the wicked as the righteous? The impression is a natural one and will produce like results, all other things being equal, but the beneficial effect of the merry heart is lessened and counteracted by the depressing effect of wickedness in the heart, manifested by cursing and swearing, passions of hatred, etc. When a person becomes enraged it may be carried so far as to suspend digestion entirely. The heart and nerve-centres excited to abnormal activities will be followed by excessive waste and depression. The teachings of Christianity enable its followers to avoid this waste of energy.

These things may be considered too trifling, as the doctrine of moderation in evil habits is held by a great many to be harmless so far as health is concerned. The little things do harm. It is "the little foxes that spoil the wine."

The folly of man is more manifest in his invalid children, in their lives of suffering, and few people realize how much misery is in the world from tobacco alone. The effort that is being made to prevent minors from smoking cigarettes is very good if it prevents this kind of smoking, but is it reasonable to expect boys to abstain from that which is an ever-present example from parents?

Before taking up the question of woman's vanity I would say to the unmarried there is a portion of Scripture suitable to direct you in selecting a husband if the applicant chews or smokes. "Ephraim is joined to idols: let him alone." Applied Christianity is equally applicable to woman's health, and the corset is as objectionable as Ephraim. When we read in the Bible of the Israelites worshipping idols, we are at a loss to understand why they should bow down to wood and stone; but why is the barbarous custom of wearing corsets still indulged in. The corset was invented in the "dark ages" and made entirely of iron; and now it is armored with steel. Woman in all probability suffers more from the effects of the corset than from anything else. Considering that vanity is anti-Christian, the teachings of Christ will be the best remedy for the corset and other barbarous customs.

A Christian lady a short time ago informed me that her mother wanted her to wear corsets as soon as she had attained a certain age, but she refused to do so. Her mother then told her that nobody would ever look at her,—meaning that her future would be classed with old bachelors and unmarried ladies,—but I am happy to say later developments proved that all men are not fools. It is not much accomplishment to be dressed in the latest from Paris if such dress curtails the physiological function. Woman, no doubt, has accomplished more in her sphere than man has, for where "sin abounded grace did much more abound;" but it is quite a serious matter for woman to set a bad example to man in this regard, as he may follow her example and blame the woman for it.

It is of the utmost importance that a woman's health be guarded and her rights protected, as her influence in the world is greater than is generally supposed. If mankind are to be saved from smoking and drunkenness we naturally look to woman as the most effective human agency for salvation. She is already doing more for its suppression than man, and if she will take the tobacco and whiskey away in exchange for the apple she will come pretty near bringing back to us a lost paradise.

It would be impossible for me at this time to point out the means of cure for physical ailments which we have on distinct scriptural authority, but this would be too weighty a matter to introduce at this time. As to the influence of Christianity on the life and health of all who accept it no intelligent person can for a moment doubt.

The fact of Christianity insuring peace enables us to enjoy and utilize one of the greatest factors of health. To be subject to all the laws which govern our bodies means complete submission to the laws of God.

6026 ELLIS AVENUE, CHICAGO, ILL.

Progress in Sanitary Engineering.[1]

BY SIR ANDREW NOBLE, K.C.B., F.R.S.

IN the course of his remarks on this subject the writer said he was not an expert, and spoke on general rather than on special subjects. Although an engineer, he had never devoted special attention to that branch of engineering with which the congress was more immediately concerned. He said "special attention" advisedly, for no man of ordinary intelligence could avoid paying some attention to such vital questions as were involved in sanitary engineering. Indeed, the strides which had been made by that science in recent years were so remarkable as to thrust themselves upon the notice of even the most careless or the most absorbed. He was old enough to claim to have seen the very beginnings of sanitary engineering, in the modern sense of that term, for he thought they might fairly attribute its inception to the passing of two measures in 1847 and 1848,—the Town Improvement Act and the Public Health Act. Certain architects, engineers, and mechanics were then led to devote special attention to the practical methods of ameliorating public health, and proved to be the forerunners of the sanitary engineers as we have them to-day,—a class as necessary, as able, and as much appreciated as any in the community. Before that time no serious attention had been given to sanitation. Everything that was done in that direction was done by rule of thumb, and, if sanitary improvements were made at all, it was only in special instances, where abominable smells or virulent outbreaks of disease forced the hands of those in authority. Commissions appointed after the passing of the acts in question, to inquire into the causes of the terribly high death-rates which then ruled, found that everything was wrong. The drainage of private houses, which as the unit must always remain by far the most important item of any sanitary scheme, was altogether defective. The houses themselves were generally badly designed from a sanitary point of view. There was, as a rule, no public water-supply, and the wells from which most houses drew their water were contaminated. There was no comprehensive scheme of town-drainage. But, even after the awakening, progress at first was very slow, because everything had to be done *ab initio*. Looking back from the stand-point of our present knowledge, we were surprised that so many of the early schemes of drainage and water-supply should have proved as successful as they did. But among the successes there was a large precentage of failures, some of them gigantic failures, involving the waste of very large sums of money. Such unfortunate enterprises were, of course, discouraging, and, in spite of the stimulus to sanitary reform given by the great outbreaks of cholera in 1849 and 1859, comparatively little was done in the first years that followed the two acts mentioned. In 1866 came a slighter visitation of cholera, and from that date he thought it might be said that sanitary progress doubled its pace. It was the last quarter of a century that had witnessed those improvements and sweeping sanitary reforms that had placed England so far in advance of any other country as regarded hygienic matters.

---

[1] Address as president of the Section of Engineering and Architecture of the Congress of the Sanitary Institute, at Newcastle-on-Tyne, September 8, 1896. From the Sanitarian.

British Superiority.—He had travelled much, and he should say that, as regarded sanitation, the continent was generally in much the same position as England in the sixties. Germany and France were in advance of Italy and Spain. But even Germany, with all her incomparable scientific accuracy and research, was only now awakening to the necessity of vigorous action in this direction. The outbreak of cholera at Hamburg in 1892 brought to the light abuses which would not be possible in any English town. In these days of fierce competition, when continental rivalry was such a bugbear in almost every trade, it was satisfactory to find that England more than held her own in the field of sanitary engineering. He wished he could say the same of that branch of the engineering profession with which he was more nearly connected, but a variety of circumstances unfortunately combined to render this impossible. The manufacture of various appliances was in itself an enormous industry, and on the sanitary arrangements of almost all the great continental hotels might be seen repeated over and over again the familiar names of English makers. In some foreign hotels he had seen statements to the effect that the sanitary arrangements were by some English firm, this being regarded as a practical guarantee of their hygienic efficiency. In preparing this address the first thing that struck him was the enormous extent of the field covered by sanitary science, trenching as it did on the provinces of the architect and the artist, the engineer proper and the doctor. It was curious to reflect how very dependent on one another were the doctor and the sanitary engineer. The plague of small pox at Gloucester had shown that all the advantages of modern sanitation would not avail where medical precautions were neglected, and the doctor, on the other hand, would find his skill and medicine important if his patient were living in an ill-drained and ill ventilated house.

Problems for the Sanitary Engineer.—There were many problems arising out of the growth of population which called for the attention of the sanitary engineer, but none were more urgent, he thought, than that of the water-supply for large towns. There was no concealing the fact that the present provision of water was in many cases inadequate. During the last few years we had been passing through a cycle of drought, and it was as impossible for us to predict how long these droughts would last as it was to conjecture their causes. The general dryness of the seasons had more than once made the board of the Newcastle and Gateshead Water Company exceedingly anxious. The population of Newcastle was increasing so rapidly as to tax to the utmost their efforts to provide water. The present rate of increase was at the rate of 3 per cent. per annum,—a rate, he believed, only paralleled in England by that of Cardiff. If Newcastle were, as many thought it, a black and coaly place, it was not for want of water to wash with. The consumption in the city now reached the proportion of 38½ gallons per head of the population. Of this, 15 gallons were expended on manufactures and on public needs, thus leaving 23½ gallons per head for purely domestic purposes. It was not too much to say that an ample supply of water was the first requisite of town sanitation. Apart from drinking purposes, personal cleanliness was impossible without it, and healthy dwellings were impossible without it, because experience had shown that a water-borne system of sewage disposal was the only one admissible for town use. The water-borne system had no doubt grave disadvantages. It polluted and made sewers of our rivers. It increased enormously the volume of noxious matter to be dealt with. It manufactured noxious gases that would not otherwise exist, and through the pipes it transported them to places where they were dangerous, and to which they would not otherwise be transported. Yet, in spite of these drawbacks, all efforts to supersede it had so far been unsuccessful; and it might be taken for granted that the water-borne system must prevail in towns for many years to come; and prospective provision of water must be based on that supposition.

Personal and Domestic Cleanliness.—He feared that they must leave to the sanitarians of the rising generation the solution of the problem involving the disposal of our sewage and the purification of our polluted rivers. The demands on a water-supply had greatly increased of late years and were increasing daily. A more frequent and much more complete flushing of sewers was now provided than was considered requisite a few years ago. In Newcastle we were fortunate in being able to secure for the most part satisfactory gradients for the sewers, but the limited space available in towns for building purposes led very often to the erection of houses in situations where a thoroughly satisfactory fall was not obtainable. Such situations demanded exceptionally powerful flushing of the sewers, and much more water was required for that purpose. Water-closets were coming into nearly universal use, and baths were very common even in low-rented houses. This meant more water. The bath was now a recognized feature of even the most modest house. He knew scarcely any direction in which sanitary progress had been more marked than in this essential. There were now baths in houses in Newcastle with a rental as low as £15, and they were being fitted, he was told, in many of the superior tenement houses. This was a very significant fact, and he attached much more importance to it than to the multiplication of public swimming baths, of which we hear so much nowadays. The corporation of Newcastle had established a number of swimming baths in the city, but report said that they were by no means so well patronized as might have been expected. The climate militated against any extended use of such baths, unless they were kept at a higher temperature than was now admissible. It was not probable that the public bath would ever become a feature of every-day English life, and it was more than doubtful whether such a consummation were to be wished. Certainly if such places were to draw large numbers they must be made far more attractive than they were at present, and offer other inducements besides those of bathing. Advocates of public baths insisted on their utility as providing opportunities for learning swimming, and this would no doubt be true if the children of the board schools were taught swimming compulsorily. As it was, he very much doubted whether the results in this direction were at all commensurate with the outlay involved, and many people believed that the number of those who knew how to swim had not materially increased since the introduction of swimming baths. Experience had shown in Newcastle that they were ill supported, and therefore presumably not required. The object at which they should aim was rather the introduction of the bath into every house. For all practical purposes this would suffice, and, above all, it would give the workingman an opportunity of taking a bath when he came home from work, tired and dirty,—and the industries in Newcastle were for the most part dirty,—at a time when he most required it and when it was most refreshing. Almost every house with any pretension to ordinary comfort now building is being fitted with a bath, and until baths could be introduced into those houses already built, establishments should be provided in all the industrial neighborhoods where the workman could obtain a warm bath with the utmost degree of comfort and the minimum of cost,—say at the outlay of 1*d.*, or better, ½*d.* For one man who would take the trouble to go to the bathing establishment, ten would bathe at home if they had a bath under their own roof. The ordinary bath in a private house used perhaps 20 or 30 gallons of water; a medium-sized swimming bath from 50,000 to 75,000 gallons. The fixed bath in houses, the common use of water-closets, the more perfect flushing of sewers, the more frequent watering of roads, the more general employment of hydraulic machinery, all meant more water.

The Local Water-Supply.—With this increasing demand the Newcastle and Gateshead Water Company had done its best to cope. The growth of the water-supply of a large town was, he thought, in some ways an index of the growth of its civilization, and he would give them a brief outline of the history of the Newcastle water-supply. The first attempt to supply water was confined to those public fountains which, with their gossiping groups of water-drawers, formed so striking a feature of mediæval life. The growth of the town rendered it painfully obvious that some more copious supply was necessary, and at the end of the seventeenth century (1697) an Oxfordshire man named Yarnold stepped into the breach with an offer to the corporation to "convey good and wholesome water to all parts of the town, where required, in sufficient quantity for the uses and occasions of the inhabitants," in return for a lease securing him the monopoly. It was a bold undertaking, but the corporation accepted his offer gratefully enough. Yarnold utilized a spring which had been tapped in an old colliery at Coxlodge. His main reservoirs were at Holmes Close, Gateshead, and the water was conducted to them from Coxlodge by a four-inch pipe laid across the moor. This pipe was of wood, and second-hand when laid down, for Yarnold had picked it up cheap in London. To get to the Holmes Close reservoirs the pipes crossed the old Newcastle bridge, and the water-supply for Newcastle itself was led back again across the bridge by a three-inch lead pipe. In winter the water was tolerably adequate, but in summer it constantly failed and had to be supplemented by water pumped from the river at Sandgate. The water was delivered to a single tap in each street, and those who paid for the privilege had at first keys which gave them access to it. The elevation of the Gateshead reservoirs was slight, and the higher parts of the town could not in consequence be supplied at all. Yarnold disposed of his water-works and monopoly to a small syndicate of sixteen persons, who formed a joint stock company. They increased their water-supply by turning pipes from some springs at Heworth into the Gateshead reservoirs. The system of service was a little complicated. From the Gateshead reservoirs two large leaden cisterns in Newcastle were filled three times a week, and from the leaden cisterns the various districts of the town got on one day of the week a few hours' service. During this weekly service period the tap in each street in a given district was supplied with water. Some districts had a supply of six hours once a week, some five, some four, and some of the smaller ones only two. The inhabitants of each street took good note of the time at which their tap was running, and by dint of hard work carried enough water in that interval to fill the large domestic cistern with which each house had to be provided.

This cistern was supposed to contain enough to keep the house going until the time came round for the street tap to give its weekly dole again. In winter the water company gave two weekly services and sometimes three. It seemed a curiously inefficient system, but it answered its purpose amid much grumbling—but what water company was not a mark for grumblers?—till the eighteenth century was well advanced. But in 1776 one Ralph Lodge, with some copartners, in an address presented to the corporation, referred to the inadequacy of the supply and offered himself to furnish water to "every inhabitant upon all occasions and emergencies in the most ample manner." This offer was contingent upon the city authorities granting him a lease of some of their springs. The corporation was in some doubt as to which of the springs had the best water from a sanitary point of view, and there were strong advocates found for a supply from the Tyne, from the Coxlodge spring, and from more than one other source. Eventually analyses were ordered to be made, and Dr. Rotherham, a Newcastle pedant, published a volume on the subject, entitled "A Philosophical Inquiry into the Nature and Properties of Water." Some of his experiments would astonish the modern analyst. His most crucial experiment was to evaporate a gallon of the Coxlodge water, then to take 30 grains of the residuum and administer it in oatmeal balls to a very young chicken. The bird was kept a whole day in the analyst's study without exhibiting any evil symptoms, and, being fed afterwards with the other chickens of the same brood, was served three weeks later for the doctor's dinner, and it appeared upon the table to be equally fat and in good condition. After such a proof of excellence it was no wonder that the Coxlodge source won the day, and the Tyne was for the time driven off the field. So Ralph Lodge and his partners were granted a 227 years' lease of a piece of ground at the south of the moor on which to make reservoirs to store the Coxlodge water which had supplied Yarnold's pipes. In 1797 Lodge's works were purchased by the Newcastle Fire Office, and in 1805 a shaft was sunk by them near the grand stand in the hope of obtaining additional water-supply. These hopes were more than realized. An immense body of water was tapped in some old pit workings, into which a stream emptied itself and disappeared from the surface a little west of Coxlodge farm-house. A windmill was then erected to pump, and this new water then became the recognized supply for Newcastle, as the Heworth springs continued to be for Gateshead. Yarnold's springs at the Three-Mile Bridge were no longer required and fell into disuse.

Cholera and Water.—So effective were the measures taken by the Fire Office Company in 1805 that the water-supply then obtained needed no supplementing for a quarter of a century. But in the autumn of 1831 Asiatic cholera visited Sunderland, and in the summer of the next year it visited Newcastle. Personal cleanliness and frequent watering of the streets were preached as preventives. There was a panic, and the reservoirs of the water company were severely taxed. The water-supply broke down. An opportunity was thus afforded for competition, and in 1833 a new water company, called the Subscription Water Company, came upon the scene. The company's works were completed and came into operation in November, 1835. So Newcastle had for the first time two water companies. Competition was very sharp, and brawls between the workmen of the rival companies not unfrequently enlivened the monotony of the streets. But this state of affairs was of short duration, for, in 1836, the older company gave way, and sold all their works to the Subscription Company for £16,000. In 1801 the population of Newcastle was 28,000, in 1821 it had increased to 35,000, but in 1841 it was 70,000. The Subscription Water Company seemed to have done a good deal to keep pace with the growth of the population, but they hardly grasped the situation, and in the beginning of 1845 a very formidable rival threatened them. This was a company formed to supply Newcastle with water from a reservoir in Whittle Dene, about thirteen miles from Newcastle, where the water of the Whittle Burn was collected by damming. The formation of that company was due to Lord Armstrong, who not only suggested the works, but in the early years of the company gave it his powerful support. As the Fire Office Company had given way to the Subscription Company, so the Subscription Company in its turn gave way, and sold their undertaking to the Whittle Dene Company for £35,000. This last association finished its works in 1848. Five large reservoirs were formed in Whittle Dene, with a capacity of 215,000,000 gallons, and Newcastle was supplied from them by a 14-inch pipe. This was the first really comprehensive scheme, and it would be useless for him to trace in any detail the development of the water-supply further from that time to this. It was merely the history of occasional failures of water and consequent grumbling, of an earnest endeavor on the part of the company to keep pace with the extraordinary growth of the town by adding reservoir to reservoir, and of the gradual elimination of Tyne water from the company's system except for manufacturing purposes. In 1848 the reservoirs contained two hundred and fifteen million gallons, and the daily water consumption was one and a half million gallons. In 1857 the storage capacity had increased to five hundred and twenty-five million gallons and the consumption to three and one-fourth million gallons daily. In 1876 the daily consumption reached eight and one-fourth million gallons. Recently the consumption had increased at the rate of 500,000 gallons a day each year, until it was now about 16,000,000 gallons. The population supplied by the company was 400,000, and the present storage capacity was 3,065,000,000 gallons. Large as the company's reservoirs were, they had proved insufficient, and an additional reservoir was in process of construction on the Rede which would bring the storage capacity to over 5,000,000,000 gallons.

Something Wrong with the Drains.—If our houses presented a great contrast with those of his youth in bath accommodation, they presented an equally favorable contrast in their arrangements for dealing with sewage. The water-closet of former days was an evil thing, with complicated gear which was constantly getting out of order, and so boxed in with wood that it could not readily be got at. In most cases it was a disseminator of foul gases through the house and a fruitful source of disease. How common an experience it used to be for such of them as had large families to find some of the household ailing, and on sending for the doctor to receive the gratifying assurance that something was "wrong with the drains." No care could insure the proper working of the defective appliances, which were all that they had at their command in those days. It had been pointed out that the typhoid which scourged the highest and wealthiest families in the kingdom was probably attributable to the fact of their sleeping apartments being fitted with such places in close proximity. All was now changed. The cry of "something wrong with the drains" was heard much less frequently, and an outsider like himself could not fail to be struck with the evidences of anxious attention and clever design exhibited in these commonplace but very necessary appliances. In such matters as ventilation and warming enormous progress had been made. Warming with hot water, which in the South of England was more or less of a luxury, was in his colder climate almost a necessity if large houses were to be maintained in winter at a comfortable temperature. Wall-papers, cooking-ranges, and beds were all topics which tempted him to speak further.

House Accommodation.—Mentioning beds reminded him of the enormous improvement that had, during his lifetime, been made in the sleeping accommodation of an average house. In even the larger houses of a former date everything was sacrificed to the so-called reception-rooms. The sleeping accommodation was altogether starved, the bedrooms for the family were small and ill-ventilated, and those for the servants disgraceful. One often wondered, in looking through well-known houses at the end of the last century and the beginning of the present, how the large gatherings of friends that certainly took place there were ever accommodated. Such houses seemed large enough outside, but when it was attempted to allot bedrooms to visitors the bedrooms were found far too few, and, with some exceptions, far too small for modern requirements. He fancied that the explanation of such anomalies was that our ancestors were content with very modest washing accommodations, and that, in the case of men, at least, and probably of ladies, too, each bedroom did duty for several occupants. A mattress on the floor or any other "shake down" was as much as an ordinary bachelor or spinster expected on a country visit at Christmas or other general festive season. He remembered a passage in George Eliot's "Silas Marner" describing the heroine's visit at Christmas to the squire's house, which he ventured to quote: "There was hardly a bedroom in the house where feminine compliments were not passing, and feminine toilets going forward in various stages, in space made scanty by extra beds spread upon the floor, and Miss Nancy, as she entered the blue room, had to make her formal little courtesy to a group of six." In Miss Burney's "Evelina" two daughters of a well-to-do silversmith were driven to dress somewhat hurriedly in the drawing room before their guests arrived. As for the servants, they slept as they could, huddled together in tiny rooms, in cupboards, or in the space under the stairs, in box-rooms or in any other recess that would contain a mattress. The country houses of Northumberland, so far as he had opportunity of judging, were bad in their servants' accommodation, though he had no reason to think they were worse in that respect than those of other countries. Modern practice had greatly improved these matters, and a much better balance was now observed between the living- and sleeping-rooms of a large house. He was inclined to think that we erred, if anything, in devoting too much attention to our sleeping-rooms, and were carrying a good theory to a fad in demanding that they should be so spacious and elaborately furnished.

In conclusion, he would say that, though the details of sanitary improvements seemed often petty or commonplace, they should not therefore be led to think them unworthy even of master minds. The general result was as vast and far-reaching as the details out of which it was built up were trival and unromantic. Who would say that a vast field was not open alike to the man of science, to the physician, and to the philanthropist when he read a passage like the following: "The probable length of life varies extremely in different surroundings. In Switzerland it is at birth forty-one years, in England twenty-eight, in France twenty-one; but in Paris it is only eight years, in London three years, in Berlin two years, and in Vienna less than two years. Such is the tax levied by our great enemy Death on the misery and the immorality of our great towns, and the tax is paid almost entirely by the rising generation." It was more than fifty years since that passage was written, and he regretted that he was not in a position to give similar figures for the present day. There was always great difficulty in making accurate comparisons of that nature, because the tables from which the figures were derived were not always obtained by identical methods. In England, he believed, the probable length of life had risen from twenty-eight to forty-five years, and doubtless in the other localities named a great improvement had taken place; but, though much had been done to improve the conditions of life, much yet remained to be done. But he drew their special attention to the passage he had quoted because, as they would have observed, the difference in the probability of life in town and life in the country was enormous. The less population dwelt in towns the greater at birth was the probability of life. In Sweden, for example, the probable life at birth was fifty-one. Lord Percy, in his most suggestive address, called attention to the continuously decreasing population in the country districts and to the continuously increasing population of the towns. He (Sir Andrew) confessed that this important subject did not appear to him to receive the attention it merited. To adults, no doubt, it made little difference whether they lived in town or country, but the figures he had quoted showed the effect on the death-rate of the young. Death was not the only evil. Enfeebled constitutions and loss of physique, in time affecting the whole race, was the infallible consequence of placing a large majority of the young in the midst of unhealthy surroundings. There was one other subject to which he must call their attention. His recent travels in the East brought him in contact with men who convinced him of the magnitude of the evil. An evil which sapped the efficiency of the British army in India and permanently injured the health of a large portion of the rising generation was surely a proper subject for the inquiry of the highest sanitary authority in the kingdom. Politicians, he feared, could hardly be expected to move in the matter, unless their duty was made plain to them by such a body as that he was addressing. It was the fashion among school-men to divide knowledge into two classes,—human and divine. To them all knowledge was divine, and never more divine than when it was busied with the efforts to lessen, however slightly, the sum of human misery, or to increase, however slightly, the sum of human happiness.

The Teaching of Climatology in Medical Schools.[1]

BY ROBERT DE C. WARD,
Boston,
Instructor in Clamatology in Harvard University.

THE time has come when climatology should be generally taught in our medical schools. It is a subject of great importance to medical men, and one about which they shall all have some rational information. In the hope of arousing the interest of the medical profession and perhaps also of provoking further discussion of the subject, the present paper is herewith presented.

The intimate relations existing between atmospheric conditions and health have been the theme of comment and investigation from the days of the earliest writings on medicine and on meteorology down to the present time. From the statement made by Hippocrates, over two thousand years ago, that "whoever wishes to study the healing art properly must do this,—first, he must attentively consider the seasons of the year,'' down to the most recent articles in the last numbers of our medical journals, there will be found abundant proof that medical men have been and are fully alive to the important influences which climatic conditions have on disease. The last few years, especially, have witnessed a remarkable increase of interest in this meteorologic or climatic side of medicine, both on the part of medical men themselves and on the part of meteorologists also. The present activity along these lines seems to be largely, if not wholly, due to the fact that meteorology is itself so young a science that it has not been able, until recently, to offer as its contribution to medical or sanitary climatology anything like systematic and reliable climatic data from different parts of the world. Medicine, on the other hand, has been so busy with its own new discoveries that it has not had the time to collect these data for its own use.

---

[1] From the Boston Medical and Surgical Journal.

The remarkable development during the past few years of our knowledge of the bacterial origin of many diseases has emphasized more than ever before these close relations between medicine and atmospheric conditions. We now know that the development and preservation of pathogenic bacteria depends to a considerable degree on weather conditions, and we know also that the status of our own bodies, which makes us liable to, or immune from, the attacks of these micro-organisms, depends likewise largely on these same conditions. We know that it is not altogether chance which determines the prevalence of one disease in winter and another in summer; which limits some diseases to one zone and some to another; which induces more or less severe outbreaks according to the character of the season.

It has been too much the custom among physicians—and no one seems more willing to acknowledge this than themselves—to send patients away from home to a different climate in the hope that the change might prove beneficial, when they themselves knew but little concerning the new climate except perhaps that, as a whole, it was drier or warmer than the old one. It certainly cannot be said with justice that such physicians have been to blame in the past when, acting on the best information obtainable, they have conscientiously recommended a new climate to a patient, when it may afterwards have proved that this change was the most disastrous thing that could have been suggested. Such mistakes have been inevitable in the past, for physicians had no means of securing the necessary information, and, furthermore, in many cases they really did not know how many meteorological data are necessary in order that a complete understanding of any climate may be had. The knowledge which not a few physicians have regarding the effect of climate on disease does not go much beyond a realization of the influence of a dry or a moist climate on various stages of phthisis. It cannot be too strongly emphasized that climate has important relations to many other diseases, such as cholera, influenza, yellow fever, paludal and nervous diseases, etc. In the case of convalescence from sickness it often becomes necessary to recommend a change of climate, and every climate is not equally beneficial in every case.

There would be no occasion for writing the present paper were there not some suggestions to offer that point to a way out of the present difficulties. The rapid advance of climatology during recent years, an advance made possible by the extension of meteorological observations to places not previously provided with instruments, has put the climatologist in a position to furnish medical men with reliable and more or less complete meteorological data from nearly all parts of the civilized world. A more careful and systematic study of climate in its relation to health and disease is therefore more possible to-day than ever before. The physician needs two things in order that he may know the effect of climate in causing and curing disease. He must be in possession of accurate data as to the various climatic elements of any place. And he must know what physiological effects these different elements have on the human body. The information needed under the first head the well-equipped climatologist is ready to furnish. There is no longer any reason on this score for delaying the teaching of climatology in our medical schools.

With a view to ascertaining the feeling of the faculties of our medical schools and colleges on this matter, and also in order to see just how much climatological instruction is now being given in these institutions, the writer sent out, on November 16 last, a circular letter, addressed to the deans or secretaries of a considerable number of our leading institutions of this class all over the United States. In this letter the following questions were asked:

(*a*) What instruction, if any, in meteorology and climatology is now being given in the institution under your charge?

(In answer to this question I should be glad to have information as to the number of hours occupied in such instruction; the year of the medical course in which it is given; a general outline of the course or courses, and the name of the instructor.

(*b*) If no such instruction is now being given, do you consider such course or courses desirable and practicable in your institution?

(*c*) In what portion of the medical course should this instruction come? And how many hours a week, or a term, should be given to it?

(*d*) If considered impracticable to have such instruction given as a part of the regular medical course, would it be advisable to have it given during the regular college or later school years?

The results accomplished by this letter have been most satisfactory, and the writer is much indebted to the gentlemen who have so cordially answered his inquiries and have shown such interest in the scheme. As was confidently expected, the general sentiment of the majority of those from whom replies were received is decidedly in sympathy with the suggestion that climatology should be taught in our medical schools, and, as was also anticipated, there is a considerable feeling against adding any additional burdens in the way of new studies to the already overburdened medical course. As regards the present teaching of meteorology and climatology in these institutions, very little is done in the great majority of cases. A few lectures on these subjects are given in some of the schools, in connection with the work in hygiene, therapeutics, practice, or bacteriology, but, with very rare exceptions, no special course in climatology seems to be provided.

We come now to the question, What should the instruction in climatology provided for our medical students include? The first answer naturally is, As much of the subject as possible. It would be well if every medical man could spare the time to master some such book as Davis's "Elementary Meteorology" (Ginn & Co., Boston, 1894), at once the most concise and the most scientific of the newer text-books of meteorology, and, if he could, add to that a general knowledge of Hann's "Klimatologie" (Stuttgart, 1883), a veritable storehouse of information on climatic matters. It is certainly not to be expected that any such extended course as is embraced by these two books will be introduced into our medical schools at present. In view of the great diversities in the arrangement of the medical courses in our different schools, and of the greater or less opportunities of introducing a course in climatology into the medical curriculum, it is not thought possible or even necessary, to present here anything like a definite outline of such a course. The writer ventures, however, to suggest a very brief summary of what he believes a general course in climatology might well include in order to be most useful to medical men.

The main object in the work should be to teach the student what climate really is,—how many factors are concerned in it ; what its controlling influences are ; why, for example, the winter climate of the southern coast of California is so unlike that of the southeastern Atlantic-coast States, or why Cape Town has different climatic conditions from those of Montevideo ; what data must be at hand if an accurate knowledge of any climate is to be had. The common impression among all classes is that climate is a simple thing ; that if the mean annual temperature and rainfall are known, and a little something as to the humidity, that is all that is necessary. Nothing could be further from the truth than this.

Climatology proper cannot be understood without an elementary knowledge of meteorology. The general facts as to the composition of the atmosphere and its physical properties should be made the starting-point ; and in order that a proper appreciation of the value and meaning of climatic data may be gained, every one should become familiar with the construction and use of the ordinary meteorological instruments. These include the wet and dry bulb and maximum and minimum thermometers, the aneroid and mercurial barometers, the self-recording barometer or barograph, the rain-gauge, the anemometer, the sunshine recorder, etc. Actual use of these instruments, the determination of the dew-point, relative and absolute humidity, the reduction of the barometer reading to sea-level, the determination of mean temperatures, pressures, and similar reductions, will be found to give a training in practical meteorological work that will prove of great value. This "laboratory work" is of great importance and should not be omitted.

The broad facts as to temperature, pressure, and wind distribution over the earth's surface can be learned from the isothermal and isobaric charts in the text-book, and a study of these should precede any more detailed work that may be done later on special climates. In a short course, adapted to the use of medical students, no careful study of the general circulation of the atmosphere need be attempted, but the control of the general wind system of the globe over rainfall, with the important climatic results thus brought about, need special emphasis. Owing to the importance of atmospheric humidity from the medical standpoint, more attention might well be given to that subject than to most others, but perhaps the most important part of the whole study concerns the control of our weather by cyclones and anticyclones. A careful study of the daily weather maps, from day to day, supplemented by the text-book, will very soon impress upon the mind of the student the chief facts in our ordinary weather changes. Without such knowledge our weather and its changes from hot to cold, and wet to dry, mean nothing. With this understanding, we are far better fitted to appreciate the climates of other places.

For this preliminary work, thus very briefly outlined, perhaps ten lectures would suffice. The laboratory work with the instruments and on the weather maps should run parallel with the lectures. The best text-book, as already stated, is that of Professor Davis, and the " Instructions to Volunteer Observers," issued by the United States Weather Bureau (obtainable on application to the chief of the Weather Bureau, Washington, D. C.), will be found useful in the instrumental work. It would, of course, be very desirable to have every medical student complete a full course in elementary meteorology, together with laboratory work, before going on to the further study of climatology; but that is hardly possible, owing to the time which such a course would occupy.[1]

After some preliminary training in meteorology there should follow a course in climatology proper, of which the following may serve as a rough outline: The astronomical relations of earth and sun; the changes of the seasons; the control of our temperatures by the sun; climatic factors (temperature, humidity, rainfall, cloudiness, wind pressure, composition of the atmosphere), and the data which should be given for each factor,—as, for example, in the case of temperature: (*a*) mean annual, (*b*) mean monthly,

---

[1] In Harvard University the course in elementary meteorology (Geology 1) is a half-course, and includes about forty lectures, besides laboratory work occupying one to three hours a week for about fifteen weeks.

(*c*) mean annual range, (*d*) mean monthly range, (*e*) mean diurnal range for the several months, (*f*) absolute and mean annual extremes, (*g*) absolute and mean monthly extremes, (*h*) mean diurnal variability, (*i*) average dates of first and last frost, (*j*) average number of days without frost, etc. ; controls of climate (latitude, altitude, distribution and influence of land and water, ocean currents, proximity of mountain ranges, rainfall, prevailing winds, soil, vegetation) ; the climatic zones and their general characteristics ; the physiological effects of temperature, humidity, pressure ; the distribution of disease geographically and climatically ; acclimatization.[1]

In this part of the work the most useful reference books are Hann's "Klimatologie," a new edition of which is promised shortly, and van Bebber's "Hygienische Meteorologie" (Stuttgart, 1895), a short and concise volume specially adapted to the use of medical men. Hann's work is divided into two parts, of which the first treats chiefly of the controls of climate and the climatic elements, and the second concerns the climates of the different parts of the world. Van Bebber's book considers the composition of the atmosphere and the climatic elements in their physiological aspects, and discusses the relations of the climatic zones to health and disease. Hirsch's well-known "Historical and General Pathology" will be found useful in treating of the geographical and climatic distribution of disease. With the assistance of the books already mentioned, any teacher may prepare a general course in climatology. In them will be found the essentials, and the course may be made longer or shorter as occasion requires.

A medical man ought to know how to interpret climatic tables. He should understand thoroughly what data he needs, and be should be able to supply any missing data from his own observations, if necessary. There are many facts in regard to a new climate that should be known before delicate patients are sent there for their health. It is not enough to know the mean annual rainfall. This should be supplemented by data as to the monthly rainfall ; the probability of rainy days in every month ; the kind of precipitation (whether general rains, lasting for some hours at a time, or thunder-storms, giving a heavy precipitation in an hour). A very useful addition is separate rainfall records for night and day, so that it may be known whether the patient will be able to be out during the day and enjoy the sunshine, or whether the general occurrence of the rain by day will keep him in-doors most of the time. This point has been brought out by a recent writer in the *Lancet.* So, also, it is well to be informed regarding the prevalence of fog, and regarding its character, whether it is a sea fog or a land fog; whether it is a general one or is found only in the valley bottoms at night. Important temperature data, not generally considered by medical men, are the absolute extremes of heat and cold likely to be met with, and the average change of temperature from day to day (mean diurnal variability). The diurnal distribution of cloudiness is an important factor. Whether the cloudiness is greater in the morning, afternoon, or night may be of great consequence in some cases, for if the morning and early afternoon are most cloudy and the night clear, some delicate patients might be obliged to stay indoors all day, and might not be benefited at all by the change in climate.

---

[1] In Harvard University the course in general climatology (Geology 19) is a half-course, and includes three lectures a week for about fifteen weeks.

Such instances might be multiplied almost indefinitely. It may be asked at once, Are such complete climatic data available for most places? They certainly are not yet; but the remedy for this state of things lies in the hands of the physicians, for as soon as there is a general demand for additional data, such data will be forthcoming. Our Weather Bureau has always shown itself willing to meet the demands of the people in every possible way. Its recent active interest in the sanitary aspect of climatology is the best possible proof of this. As far as the United States is concerned, our Weather Bureau can be relied upon to furnish physicians with all information of which it is itself possessed, and to take steps to acquire any desired information which it has not. It can hardly be expected that a brief course, such as is possible in our medical schools, will fully equip the student in climatology. At best it can only partially equip him. But it can at least give him access to the literature that may help him should occasion require; and this, if it accomplishes nothing else, is sufficient warrant for giving such a course. At present comparatively few medical men know where to go for such information. More or less information as to climate is, of course, to be found in the books on hygiene, and medical men do not need to be reminded that in the "Index Medicus" will be found many references to articles on various subjects connected with medical climatology. Most of these articles are on the relation of special climates to special diseases, or concern the physiological effects of some one element, such, for example, as diminished pressure, and do not treat of the general aspect of the study. A very complete bibliography on acclimatization will be found at the end of the admirable paper under that title, by Professor Wm. Z. Ripley, in *Appleton's Popular Science Monthly* for March and April, 1896.

In seeking definite information as to the climate of any part of our own country, or any other, it is always best to write to the chief office of the Weather Service for the desired data, rather than to trust chance reports on local climates, unless such reports are issued by physicians or associations of recognized standing. So many circulars containing climatic statistics have been published for advertising purposes that great care is necessary in making a proper selection.

As already stated, it is impossible to lay out any definite course which might answer for every institution. There seems to be a pretty decided majority of the deans of our medical schools in favor of having some instruction in climatology given in their institutions. As to how such instruction should be given is the question; whether as a part of the regular course or as a voluntary subject. In the opinion of the writer it would be best at the outset, in most cases, to have the course a short one, at which attendance would be voluntary. Then, if the students showed a disposition to take the course it might easily be extended. He believes further that the subject is of sufficient importance to stand by itself, independent of any other. It would certainly be well for any instructor who wished to do so to speak of the effects of climate in any lectures on hygiene, or therapeutics, or bacteriology. Each man would probably wish to treat the subject differently from any other instructor, because he would see it especially in its relations to his own branch of medicine. But the broad general facts as to climate, which can be and ought to be taught independently of their bearing on any special diseases, should be considered in a separate course. Whether that course shall come in the first, or second, or third, or fourth year; whether it shall be voluntary or required; whether long or short, must be settled in each institution for itself. That the subject is one of prime importance in the education of a medical man none will deny. And that it should be generally taught in our medical schools is acknowledged on all sides.

THE ANNALS OF HYGIENE
PUBLISHED MONTHLY
SUBSCRIPTION TWO DOLLARS
A YEAR, IN ADVANCE.
Address all communications to
UNIVERSITY OF PENNSYLVANIA PRESS

EDITORIAL

All subscriptions to "THE ANNALS OF HYGIENE" are taken "until ordered discontinued," and no agent has authority to make any other arrangement. At end of time to which subscription has been paid or promised, a bill for a year in advance, with return envelope, is sent, and if journal is no longer wanted, the subscriber should mark "Discontinue" on the bill and return to us. A failure to so return bill is considered an order to continue.

COMMUNICATIONS SOLICITED.

We are always anxious to receive short communications—500 to 1000 words—on practical subjects pertaining to hygiene. To any one sending us an acceptable article, we will forward THE ANNALS OF HYGIENE for one year *free*.

Society and Health.

NOT many words are necessary on this subject, because there is no scope for discussion; a fact only can be asserted. It would not take much space to prove that four times two make eight, because such is a fact beyond the province of dispute.

Unwelcome as the assertion may be to our younger readers, we must yet emphasize to them the fact that *fashionable society* of to-day and health are incompatible.

We regret the necessity of saying this, because most young persons erroneously think that there is a great deal of *real* pleasure in "society," and look forward to their *début* therein with wonderfully rosy anticipations. It seems a pity to say anything to dampen these ardent spirits; but were we to remain silent on this point, we would justly merit the reproaches that might be heaped upon us by those whose health had been ruined by "society," when, having reached mental maturity, they looked back upon the physical mistakes of their early lives.

Clearly understand that we do not mean friendship, sociability, comradeship, or social intercourse when we speak of "society"; but that we are to understand it as referring to the dissipation, loss of sleep, irregular eating of unhealthful food, improper methods of dress, unnatural and excessive excitement or stimulation and corresponding depression, the indolence and neglect of exercise, and the thousand and one accessories of fashionable society.

It must be evident that the most healthful mode of life is that pursued by religious communities; let us take this life as one type, and the life of the fashionable society man or woman as the other. Your own observation will make evident to you the fact that these two types are diametrically opposed to each other. We are not advocating or recommending individual seclusion; far from it; there are no more social, companionable, genial persons in the world than members of religious communities; they are by no means the melancholy, dejected recluses that those unfamiliar with them imagine. All the healthful pleasures of the world they enjoy; it is only the artificial and deceptive *seeming* pleasures that they avoid.

The most distinguished surgeon of America (the late Dr. D. Hayes Agnew) once said, "There is no tyranny more exacting or despotic than that exercised by the conventionalities which govern our living. Beyond all contradiction, the behests of fashion are vastly more influential in governing public conduct than any arguments drawn from the teachings of function and structure. As a rule, when the conflict is between *taste* and *reason*, the victory will be on the side of taste."

We full well realize the truth of what this eminent man has said, and will not waste time, ink, and paper in writing against "society."

Your own judgment and reason will tell you that if you wish to follow the advice and teachings of hygiene, you cannot participate in the follies of fashionable society; if you decide to do otherwise, you must accept the *inevitable* penalty of ill-health and short life.

With this *unquestionable* assertion we will drop the subject.

NOTES AND COMMENTS

Little People.

There are several pigmy races, varying little in size and ranging from three and a half to four and a half feet in height. Among others are the Itas, of the Philippines, the Andaman Islanders, and the Akkas, of Central Africa. Of the African dwarf races Emin Pasha states that the tribes near Lake Akkas average four feet one inch. Dr. Parke, who in 1886 discovered the Batwa, gives their average height as four feet three inches, but places them intellectually above the Nubian negro. These races are regarded by some anthropologists as survivors of a race that may have once occupied a much wider region, extending, it is suggested, over India, North Africa, the Pyrenees, Switzerland, and Central America.—*Popular Science.*

Science in a New Role.

The capital of Rio de Janeiro has a notoriously bad climate. It is a fastness of yellow fever and other tropical ailments, and the death-rate is so high as to seriously affect the commercial prosperity of the city. Recently the Brazilian government decided to remove the capital, and appointed a commission of local scientists to fix a site. The commission has selected a plateau between 15° 40′ and 16° 8′ south, and 49° 30′ and 51° west. It is 4000 feet above the level of the sea, and its temperature resembles that of middle France. There is plenty of water for agriculture, and no yellow fever. The journey by railway from the coast will take eighteen hours. This is believed to be the first occasion on record in which science has been called in to choose the site of a capital.—*Popular Science News.*

Wine for Science only.

In England there is a cellar full of wines of the choicest vintages, which bid fair to spoil for temperance' sake. Years ago, by the will of Sir Walter Trevelyan, of Northumberland, England, that knight's famous wine-cellar became the property of

Sir Benjamin Ward Richardson, the head of the Temperance Hospital, in London. But the will enjoined Sir Benjamin from using the wine for other than "scientific purposes." Convinced that none of the wine in all the sixty dozen famous vintages in the cellar could be used for the purpose specified, Sir Benjamin did not draw the cork of a single bottle.

At his death, recently, his widow became the possessor of the valuable cellar; but she, too, is forbidden to use it except in the interest of science. She cannot, under the will, sell the now famous wines, even to donate the proceeds to the cause of temperance. To store the many bottles year after year is expensive, and yet there seems to be but one other course,—to destroy!—*New York World.*

Peasant Credulity.

An almost incredible instance of the hideous results of ignorance and credulity is vouched for by an eye-witness who writes to a Southern Russian paper. A peasant woman in the village of Slavyansk has a daughter, aged 10 years, who recently suffered from some affliction of the eyes. She consulted a "wise woman" in the village, who gave her the following advice: She told her to procure some gunpowder, put it in the child's eyes, and apply a match to it. This advice the mother implicitly followed. The writer of the letter states that he was passing the house at the time, heard the report, and went in to see the cause of it. He found the room full of smoke, and when this had cleared off the wretched child was seen lying in agony with two cavities where once had been eyes. The mother was also injured by the explosion.

What Women think About.

What does a woman think about as a general rule? According to a profound philosopher, to whom we leave the entire responsibility of his statements, says *Tit Bits*, the following are the principal mental occupations of a woman during her existence:

When 4 years old she thinks of sweets and bonbons.
At 7, her doll's her sole anxiety.
At 13, she dreams night and day of her little cousin.
At 18, she yearns for a romantic marriage.
At 21, her thoughts are engrossed by her first baby.
At 35, they are transferred to her first gray hair.

When about 40, her mental balance is sorely tried by her first wrinkle and the disagreeable prospects they open up.

At 50, she begins to think of the past.

And later on, she turns her attention to the future prospects of her grandchildren.

A Perilous Period.

Recently, two grandchildren, the first two, both under 3 years of age, have come into our home on a visit. However extraordinary they may be in many ways, they have some instincts and traits of character in common with children in other homes. They have appetites, likes and dislikes, and commanding ways; they have aunts and uncles, as well as grandparents. Just here is where the peril lies. The wants of the "blessed" babies find a responsive chord in the affections of their older and devoted relatives; and the stomach and digestive organs of these little ones are daily surprised by the novelty and variety of the food tumbled into them. They are even *tempted* to take a little of this and of that,—just a little won't hurt them, don't you know! and thus their digestive powers are so sorely tried as to rebel; and colic, "summer complaint," diarrhœa, dysentery, and other gastric and intestinal troubles often supervene,—all for love!

It seems a wonder, almost, that grandchildren ever survive the kindness of their grandparents and other relatives, but observation testifies that many do! May the number thus surviving increase!—*Iowa Health Bulletin.*

Grapes.

There is no more nutritious, delicious, and healthy fruit than the grape. Fortunately it is easily grown, and can be found in abundance in almost every clime,—if not from having grown there, by transportation. Of late years, since so much has been written and said about appendicitis, we have found a good many persons who are very fond of grapes, who have a great longing for them, and whose system needs them, refuse to eat them through fear of a seed getting into the appendix and setting up fatal inflammation. If they eat them at all they merely break them open in their mouth, swallow the few drops of juice they contain, and spit out the rest. Such treatment is an insult to the grape, and the rankest ingratitude to Him who made them so easy of culture, so delicious and palatable, and so nutritious and healthful.

There are persons who hesitate to eat this fruit through fear of appendicitis, and yet who do not fear to use tobacco or alcoholic stimulants! Could there be more palpable and foolish inconsistency? We venture the assertion that for every person who gets appendicitis from eating grapes there are at least 5000 who die from alcoholism, and as many die or have impaired health from the use of tobacco!

Grapes are becoming more plentiful every year. In Iowa a few years ago they were comparatively scarce and were a luxury. They are rapidly becoming the fruit of the poor as well as of the rich. They can be eaten by almost any person with impunity and profit, and in liberal quantity.

Let no one who can obtain them be frightened by the bugaboo of appendicitis.—*Iowa Health Bulletin.*

Chinese Boys.

Women the world over have a fashion of saying that men have the best of everything. This is certainly true in China. According to a small pamphlet just issued for the information of his American friends by the Rev. S. G. Miner, a missionary in Foo-Chow, the Chinese man's good time begins at birth.

In telling of the children of China, he speaks first of the boys. One-fourth of the children of the world are born to Chinese parents, and the goddess Mother is the most diligently worshipped, so that they all may be boys. But this is a hard thing for even so great a goddess to control, and many girls are born. When the news of a birth is announced everybody asks, just as they do in America, "Is it a boy or a girl?" If it is a boy all the friends of the parents call at once to offer congratulations and presents, but if the baby is a girl they extend sympathy. The kindest remark that the disappointed mother ever hears under such circumstances is, "Well, a girl is worth something." Every city has a baby-tower built on its outskirts, which is the burying-place for infants. Not infrequently a newly-born girl is drowned, left on a missionary's door-step, thrown into the street, or, before she stops breathing, is tossed into this death-house.—*New York Sun.*

THE ANNALS OF HYGIENE
PHILADELPHIA
VOL. XII NO. 5

COMMUNICATIONS.

The Nervous System in Disease.

A Plea for Greater Recognition of the All-Pervading Influence of the Nervous System upon Disease in General.

BY JOSEPH F. EDWARDS, A.M., M.D.,

Atlantic City, N. J.,

University of Pennsylvania, 1874; Ex-Member of State Board of Health of Pennsylvania; Founder and Editor of THE ANNALS OF HYGIENE; Foreign Associate Member of the French Society of Hygiene; Fellow of the College of Physicians of Philadelphia; Member of the Philadelphia County Medical Society, etc., etc., etc.

(Concluded from page 224.)

IT is a notorious fact that chronic disease is very free from constitutional symptoms; what I mean is that a slow, chronic process will not make its progress evident to the senses. A chronic ulcer on the surface of the body is noted by the absence of constitutional symptoms, while the whole system is affected oftentimes by an acute ulcer, and that which holds good of an external ulcer is equally true of an internal disease. The reason for this fact is not difficult of comprehension; it is to be found in the law of tolerance. Thus, if any one of my readers, who has never taken any opium, will lay down this book and take five grains of the drug, he will never read any more; but if he will commence with a daily dose of one-quarter of a grain, and gradually and persistently increase the dose, the time will come when he can take 50 or 100 or even 200 grains at a single dose without any appreciable effects ; familiarity with the drug has bred a contempt for its obviously poisonous properties ; but, though it has had no *apparently* evil effects, this prolonged use of the poison has been quietly but surely doing its evil work. So, when an acute disease suddenly attacks a body that was previously well, the dose of the disease, so to speak, overwhelms it; the symptoms are most urgent ; but if the departure from the normal standard be at first extremely slight, the dose of the disease is so small that its effect is scarcely appreciable ; familiarity with this slight derangement breeds a contempt for its effect, and so, day by day, as the chronic derangement grows more and more pronounced, so does the system grow equally more and more tolerant of its evil influence, until the time finally arrives when the derangement of the organ or organs affected is so great that the power of the body to ignore its effects has become exhausted.

It is because of the insidious nature of the approach and progress of chronic organic disease that I have come to feel that every year and every day of every year many valuable lives are unnecessarily sacrificed. I have no doubt that in the office of every practising physician there would be found, daily, cases of chronic organic disease if every patient that presented himself were thoroughly examined,—cases that are not even suspected,—for we must not forget that while chronic organic disease will not, as a rule, force its presence upon the patient by symptoms that will attract and rivet his attention, *yet it will present signs that will demonstrate its existence to the physician who will look for them.*

This brings me to the enunciation of, I fear, a Utopian idea, that I have long cherished fondly in my mind ; Utopian, I fear, so far as the mass of humanity is concerned, as it would not be possible to have them acquiesce therein. I have never felt satisfied with the practice of medicine as we find it in the office of the average physician. At the bedside matters are more satisfactory. When a person is sick enough to be confined to his bed, and the physician is summoned, the symptoms manifested are usually sufficiently urgent to demand a thorough investigation, and, as a rule, the intelligent physician will acquire as much familiarity with the condition of his patients as is possible with the means and knowledge at his command. I do not know that we can much improve upon the *rationale* of bedside practice ; but it is about what we might call office practice that I am so dissatisfied. I have already hinted at what I mean, but let us now go more into detail.

Of course, there are extremes in medicine, as in every other walk of life. We have routine physicians and we have *extreme* routine physicians ; that you may the better understand my idea, I will first assume the position of an *extreme* routine physician, a class that may be typified by the story which a Portuguese newspaper tells of the American physician, whose custom is assumed to be so enormous that the following "laconic process" must be employed :

Enter a woman, with a finger in bad condition.

"Cut ?" asks the doctor.

"Bite," replies the woman.

"Dog ?"

"Parrot."

"Baked potato."

On the following day the lady returns.

"Better ?"

"Worse."

"Hot poultice and bread-crumbs."

Third visit.

"Better ?"

"Well."

"Three dollars. Good-day."

If this physician ever has a clear understanding of the nature of the disease with which his patient may be afflicted, or if he ever prescribes the proper treatment, it is because he has accidentally stumbled upon the truth. There is certainly no science in such practice.

The ordinary routine physician may be typified by the *contract* physician in Berlin, who follows this schedule in his examinations and consultations :

Minor surgical cases	15	minutes.
Headache and other pains	5	"
Influenza	6	"
Rheumatism	6	"
Examination of the lungs	5	" etc.

Fortunately, we do not encounter many physicians of the first class ; but of the second class there are many. Let us enter the office of such a doctor. I am complaining of rheumatism. The doctor talks to me for, maybe, five or six minutes and gives me a prescription containing salicylic acid. I go off and dose myself with this drug. My rheumatism gets a little better, but I am still considerably troubled with it, and now, in addition thereto, I commence to suffer from dyspepsia. After a while, I commence to feel badly all over. Now, what has happened? The real trouble, in my case, was that my kidneys were deranged, and what I thought was rheumatism were really only muscular pains that were produced and maintained by the faulty action of my kidneys; the salicylic acid did me some good, for it does have a specific action on such pains; but, at the same time, this drug has deranged the functions of my stomach, and, as an irritant to my kidneys, it has only made the disordered condition of these organs worse. But the physician is hardly to blame, because I have presented to him all the evidences of rheumatism, and his text-books all tell him that salicylic acid is a good remedy for rheumatism. But he has not penetrated deeply enough into my case; he has viewed me, not in my entirety, as a piece of mechanism requiring universal integrity, but as a rheumatic, calling for special medication.

Am I understood? The public recognize dropsy as a disease; every physician knows that it is only a symptom of disease of some organ; but the physician does not follow this idea out to its ultimate logical conclusion. Any physician who would treat dropsy as a disease would be considered a very ignorant man; he would institute measures to relieve this particular symptom, but he would know that it was only one evidence of some organic disease, and he would also know that unless he could find out the nature of this disease and remove it he could not permanently remove the dropsy. Now, it seems to me that, to be rational, he should follow out this same course of reasoning and practice with every case that presents itself to his notice. If I complain of rheumatism, he should not only seek to find the cause of the rheumatism, but, according to my ideal idea, he should even go further.

Knowing what I do about the human body and its derangements, I would like my physician to make a thorough examination of my whole system. I would like him to examine my heart and lungs, my kidneys and liver, my stomach. I would want him to examine my blood, my muscles, my excrement, my secretions and excretions. I know that physiology teaches us what should be the condition and duty of each and every part of my body. I would like my physician to construct, mentally, an ideal man, based upon the teachings of physiology, and I would like him to examine me and to have me under observation until he could tell me just wherein and to what extent I departed from this ideal standard ; and then I would like him to tell me how I could make myself conform more closely to this standard. I would be ready to believe him if he were to tell me that I did not require any drugs ; that I wanted only a modification of my life habits, and I would be equally ready to trust his skill if he ordered me some drugs to supplement or assist his hygienic advice.

We have all heard persons remark on the value of the old family physician, who has attended the members of a certain family from the date of their entrance into this world, and who, because of this extended observation, is naturally credited with a most intimate familiarity with his patient's system and its requirements. Now, I would that every physician should, by cultivation of the practice of such thorough examinations as I have hinted at, obtain an equally intimate familiarity with the condition and needs of each patient that comes before him.

If I have a pain or an ache, or some reason to think that I have a disorder somewhere in my system, and if I consult a physician for relief, I would not be at all satisfied if he were to confine his examination and his opinion and treatment to the organ or part from which the symptom apparently originates ; I would want a complete examination of all my parts. Neither would it be satisfactory to me to have even the most careful examination of my internal organs only ; I would want to know something about my blood and my various secretions and excretions.

It may be that my kidneys and liver are all right, so far as they have been examined ; it may be that no evidence of disease has been discovered, but I am not yet satisfied. I know that it is the duty of my kidneys to remove certain of the elements of tissue-change from my body ; that they are scavengers ; the examination has revealed the fact that they are doing their work, but I want to know whether they are doing it as thoroughly as they should ; I want to know whether my blood is being properly purified, and I therefore ask my physician to make an examination of my blood. Physiology tells me what the blood should be, and my common sense tells me that if my blood does not conform closely to this standard it will not be capable of properly nourishing my body. If I am about locating in a country home, one of my first thoughts is to have the water that I am going to use analyzed; if it is faulty, then I must devise some means to remedy the defect. I am fully alive to the fact that, if good water is essential to health, good blood is pre-eminently so, and I want to know whether my blood is good, and if it is not, I want to know how to make it so. I know that if I am eating too much nitrogenized food, more than my system requires, the excess must be removed by the kidneys, thus imposing unnecessary and undue work upon these organs. I believe that this extra work will exhaust these organs, and that this exhaustion, if prolonged, will degenerate into chronic disease. Therefore, I know that even though my kidneys may not now be diseased, it is perfectly possible that they may be overworked, and I want to know whether this is the case. If I find that my blood is excessively full of the elements indicated, then I know that my kidneys are being overworked in their efforts to eliminate this excess, and if I do not apply a remedy the time will surely come when I will have Bright's disease. I know that this same line of reasoning holds good with all of my organs, and I know that a careful examination of the blood will elucidate my condition most fully.

I have the firm conviction that the condition of my blood will go far towards demonstrating the needs of my system, and will help greatly to indicate a rational and successful line of treatment. If I find that it is deficient in any particular element, then do I see the necessity of taking measures to supply this deficiency. I would never feel satisfied until I had a full and complete analysis of my blood.

Then, again, physiology teaches me that a most important act of digestion is performed by the saliva, and it furnishes me with the composition of normal saliva. Is my saliva normal, and does it properly perform its work? It is very essential that I should know this; because, if it does not, then the very first step in the process of digestion, the very beginning of blood-making, is not properly performed. Therefore am I anxious that my physician should not only make a chemical analysis of my saliva, but I would also like him to artificially digest in his test-tubes some of the articles that are usually digested by saliva, using my own saliva for this purpose. If these two tests are satisfactory, then do I have both the theoretical and crucial practical test that (other things being equal), in my case, the first step in digestion is normal. This fact being ascertained will be a source of satisfaction to both the physician and myself; for we will now know that the food intended to nourish my body has been properly started on its journey. Now, this food passes on into the stomach, but, unfortunately, we cannot so easily get access to the digestive juices of the stomach; hence we cannot get down so accurately to the processes that are there taking place. We could procure the juices of the stomach for analysis, but the process by which they would be obtained would be so unpleasant that it would be hardly practicable.

However, we will get at the same thing in a different way. We know that of the materials taken into the mouth, as food, only certain parts are capable of furnishing nourishment to the body; we know that the balance will be ultimately removed from the body as waste. The familiar household illustration of brewing tea will make this clear to you. The tea-leaves are subjected to the action of boiling water, and certain ingredients are thereby extracted therefrom; that which remains is thrown out. So the food which enters the body at the mouth passes down the throat into the stomach, and from there on into the intestines or bowels. If we imagine a rubber hose, some twenty-six or twenty-eight feet in length, with a very decided enlargement or dilatation (the stomach) about two feet from its beginning, we will have a fairly good idea of what anatomy calls the "alimentary tract,"—that is to say, the portion of the body concerned in preparing food,—the kitchen or laboratory in which the crude food is prepared for reception into, and nourishment of, the body. From the moment of its entrance into the mouth, chemical changes are taking place in the food. The saliva first; then the juices of the stomach; then of the intestines or bowels; the fluids of the liver, that are conveyed by tubes into the bowels, all play their respective parts in the conversion of the beef, or the potatoes, or the bread, which we have eaten, into nourishment suitable for the body. You will remember that not all that we eat can be converted into nourishment; like the tea-leaves, there will be left, as refuse, certain portions of that which we have ingested. This refuse will traverse the whole length of the bowels, and will be voided in what should be our daily evacuations.

Now, physiology has been able to tell us all about this chemical transformation of crude food into bodily nourishment. We know what portions of certain articles are capable of being taken into the tissues of the body as nourishment, and what portions will be voided as excrement or waste. But we know even more than this, we know in what portions of the kitchen or laboratory the different changes ought to take place. We know what changes are effected by the saliva; what ingredients are converted by the juices of the stomach; what nourishment is prepared in the bowels; and we are fairly familiar with the duties of the liver and accessory organs. Armed with this knowledge, if we know what has been taken into the mouth, we can, by considering the ingredients that have been removed from it by the process of digestion, and adding to it the waste matter from the system at large that has been carried to and deposited in the bowels, as in a sewer; we can, I say, form a fairly correct estimation of the nature of the waste that should be discharged from the lower end of the bowels.

Therefore, I ask my physician to make a careful chemical and microscopical examination of the evacuations from my bowels. If they are found to be normal, and if my blood is also normal, then can I rest assured that my laboratory is perfect in its workings.

I do not believe it would be possible to over-estimate the value of the knowledge that would be derived from a thorough examination of the evacuations from the bowels, particularly if with this examination were conjoined a careful analysis of the blood.

Again, all over the body are thousands upon thousands of sweat-glands. They are not there by accident. Nature has done nothing blindly. She has had a wise purpose in view in even the most seemingly insignificant of her actions. She has had a definite idea in giving us sweat-glands. She has intended that they shall, by carrying moisture to the surface, from which it is evaporated, maintain the equilibrium of the bodily temperature; but she has also designed that they shall serve as scavengers to remove a goodly portion of the refuse or waste from the system. Are they doing their duty? I ask my physician to examine my sweat. He gives me a drug to increase the flow of sweat, and he analyzes it. If it is normal, so much the better; if it is not, then we know wherein it is deficient, and we look for the cause;

and so on we go through the various organs and functions. By this time I have a pretty good idea of the working of my various organs, of the condition of my blood, and of my various secretions and excretions.

Now I want to know something about my muscles and my nerves. Are they in proper condition? I ask my physician to bring out his electric battery and test the condition of my muscles and nerves; my senses of hearing, vision, taste, smell, and touch are also looked into.

Well, now, considerable time has been given to this examination, but with what a satisfactory result! My physician has a clear and distinct and intimate understanding of the condition and workings of every part of my body. If they are all normal, then can I be sure that I neither have, nor am I in fear of having, any chronic organic disease, so long as I persist in my present routine. That whatever symptoms may be present are due to functional derangement, dependent upon a disordered nervous system and capable of correction when the nervous system has been restored to a normal condition.

If I am deranged, my physician knows just where the derangement is located, and to what extent it has progressed. There will be no blind, empirical, routine treatment, following such an examination as this. If I require treatment, my physician will not blindly prescribe some drug for one organ, which, because of the derangement thereof, may prove seriously detrimental to some other organ or part. My condition, as a whole, will be prescribed for, because my physician is familiar with my whole condition.

It is to me almost incomprehensible how a physician can be satisfied to confine himself to the examination of only one organ or part, when he realizes how extremely intimately associated and interdependent are all the parts. It can only be accounted for on the ground of apathy on the part of some, and inability on the part of other, patients to submit to such an elaborate investigation as I have outlined. The time consumed therein would, of course, increase the cost of such an examination over the ordinary consultation as now in vogue, and this fact would prohibit it for many; but, fortunately, it would not preclude the benefits of such an investigation for those who require it most,—the wealthy class, for it is among the rich that chronic organic disease is mostly to be feared and found. The very self-denial necessary to the comparatively poor will save them from chronic disease, while the self-indulgence of the rich will afford the conditions most favorable for chronic organic degeneration.

I have been writing so much of the other organs that we may possibly lose sight of my central idea of the all-pervading influence of the nervous system if I do not call attention to the fact that even should this elaborate investigation reveal the presence of organic disease, our efforts to combat the disease will meet with but little success until we have ascertained the nature of the derangement of the nervous system that has rendered the existence of the disease possible, and corrected it.

Now we come to a most important question. If all disease originates from a disordered nervous system, what is the cause of the disorder of this system?

Before answering this question I must premise that the nervous system is an extremely delicate organization; that the function of the production of nervous force or "vital steam" is, of all the vital functions, the most easily deranged, and that to me it is a constant matter of surprise, not that so many nervous systems are out of order, but that any of them are in order.

The causes active in producing a disordered state of the nervous system are infinite,—chemical, mechanical, physiological, psychical, originating from within and introduced from without; all the conditions of our so-called civilized and progressive age are antagonistic to the existence of normal nervous systems.

Man is an animal designed, anatomically and physiologically, as other animals are. Every animal has a nervous system intended to make vital force or "vital steam" to be used for two purposes,—

(1) To maintain his own body in a state of activity or life.

(2) To reproduce other animals like himself.

These are the normal functions of the nervous system, and with all animals who thus utilize the nervous system this system remains normal; disease and premature death are practically unknown; the animal *ceases to live* only when the nervous system is worn out. But, if this nervous force is diverted from its intended channels into others, that which it has been intended to do must be but imperfectly done; while if this unnatural demand be excessive, the system supplying it must suffer in consequence, just as the boiler or the furnace will become prematurely disabled if unreasonably pushed. Now, I contend that since our nervous systems were not originally designed or intended to supply vital force to meet the unnatural demands of modern business and modern social requirements, that when so called upon one of two things must ensue; either this excessive demand must entail excessive work upon the nervous system with subsequent exhaustion and prostration thereof, or if the nervous system is unequal to the supply of this extra demand, the will-power directing that which it does supply into the channels of business and society, the vital processes must suffer, because they will not receive enough vital force to enable them to properly functionate.

I am not preaching against business methods or society exactions; I am merely stating facts in reference to their influence upon the nervous system.

Again, inheritance is a potent factor; one may inherit a fairly good nervous system, yet not strong enough to meet all the demands that he makes upon it; when these demands reach a point in excess of the power to supply, the nervous system is bankrupt, and all the organs and functions dependent upon it are deranged.

I must lay special stress upon the causative influence of business and society, because they are the two great causes of deranged nervous systems and of the diseases and disorders dependent thereon.

It is among the rich, the great business and society class, that we find the most disordered nervous systems and diseases of other organs dependent thereon and produced thereby. The influence of heredity in predisposing the nervous system to derangement is very interesting.

Twenty years ago I overheard one of the leading newspaper publishers of this country, himself then 80 years of age, boast that when he died he would leave each of his eleven children worth one million of dollars; his boast was verified, but the majority of these eleven children are now dead. This good father left his children princes financially, but paupers physically; his nervous force or "vital steam" had been diverted from its natural channel; it had been utilized to enable him to make eleven millions of dollars, and being so utilized, it could not be used for the manufacture of vigorous children.

The nervous system of this man, itself strong and hearty, was making ample vital force to enable him to make either money or children equally as strong as himself, but not both; he directed this force into the financial channel and his children suffered. This is an extreme case, I will admit, but it serves to point a great truth, proof of which in similar cases all my readers will find in the histories of their friends and in the histories of men eminent in any walk of life, whose children, as a rule, will be found inferior, mentally and physically, to the distinguished parents who have produced them; this inferiority being most marked in the direction in which the parent's superiority was most marked, and, generally, the degree of inferiority of the child will hold a direct proportionate relation to the degree of superiority of the parent. This is an unquestionable fact that will be obvious to any unprejudiced person who will reflect upon the subject. Our great men in every walk of life, our leading lawyers, physicians, statesmen, clergymen, soldiers, business men, are not the offspring of men who have been themselves famous; of course, there are some exceptions to this rule, but so few as only to prove the rule.

The vigorous old railroad magnate, who lived for eighty years unconscious of the existence of his nervous system, leaves a son whose nervous system runs down at 60; and he, in turn, a son whose nervous system is shattered at 45. How many presidents of the United States have had distinguished parents? How many eminent physicians bear names that were eminent fifty years ago? Where are the offspring of the leading men of this country of forty years ago? Let your answer to this question furnish proof of the truth of my assertion.

To apply this idea, the offspring of our leading men, of our active, energetic, pushing, go-ahead leaders in all walks of modern life come into the world with nervous systems unnaturally susceptible of derangement. Those who have inherited vigorous nervous systems demand too much from them, and in both cases the result is derangement.

A inherits five millions of dollars and B one million; if they each spend half a million a year they will both soon become bankrupt, but A will hold out longer than B.

As with money, so is it with the nervous system; the nervous system of each and every human being is capable of meeting a certain amount of demand for nervous force, the amount that it is capable of supplying being dependent upon the integrity or inferiority of the nervous system that has been inherited; but even the most perfect nervous system must ultimately give out if the demands are so great as to *force* this system to more work than it is designed by nature to perform. The nervous system might be not inaptly compared to a holding of United States bonds; so long as the interest of these bonds only is spent, the investment will remain intact and can be transmitted in its entirety and integrity from father to son; but if the principal is infringed upon it will gradually fade away, and when some sudden and unexpected demand is made upon the owner he will be brought to a realization of his want of money. Again, if less than the income is spent, the investment grows, and when transmitted to the son is greater than when inherited by the father.

Identically the same is it with the nervous system. The nervous system is not only a force-producing system, it is, so to speak, a storage-battery as well; if one utilizes only the amount of vital force that his nervous system can produce naturally (the income, so to speak), he will have good health, and will transmit intact that which he has received; if he trespasses upon the principal by excessive demands, he will become, sooner or later, more or less of a nervous bankrupt; if he consumes less than he makes, the surplus production will be stored up, his nervous system will grow stronger daily, and he will transmit a better nervous system than he has inherited. Now, I have announced an apparent contradiction of one of my former statements, for, in describing "nervous exaltation," I have said that it was a condition in which repair exceeded waste, in which more than enough nervous or vital force is generated; why, then, is not this excess credited to the nervous system? Why is it not stored up to the ultimate improvement and strengthening of the nervous system? Because the over-production in "nervous exaltation" is an *unnatural* forcing process; in the one instance we have healthy economy and sound accumulation; in the other, artificial inflation, so to speak, with its inevitable extravagance. The farmer who raises the normal quantity of grain per acre and properly cares for the ground, saving each year a little from the proceeds of his crop, is prosperous; the farmer who *forces* his land to the production of phenomenal crops ruins the productiveness of his soil; his large returns are extravagantly spent, and when the ground is no longer capable of production he is ruined.

"*Nervous prostration*" is a much more desirable and less dangerous condition than "*nervous exaltation*," because its obvious manifestations will call for relief, while in "*nervous* *exaltation*" there is an ability to do and an appearance of health that deceives and deludes the victim and his friends. Most of those who are called "*cranks*," whose complaints are considered as imaginary, who are said to have "lost their nerve," most of such will be found upon examination to be suffering from "nervous exaltation."

"*Nervous exaltation*" is a fatally dangerous condition; unless it is recognized and corrected it must eventuate in "nervous prostration;" the degree of prostration holding a direct proportionate relation to the intensity of the pre-existent exaltation; the pendulum must swing back just as far as it has been forcibly pushed in the other direction. If one attempts to force an inferior nervous system it will very soon become prostrated; if one attempts to force a superior nervous system it will not only respond to the demand, but it will do more than is asked of it; it will become exalted, it will produce every particle of nervous force or "vital steam" of which it is capable, and in doing so will wear itself out. I have in mind the case of an ex-speaker of the House of Representatives of Pennsylvania, an unusually brilliant lawyer, who, once started, could and did work night and day, but who was in such a state of *apprehension*, of unfounded, vague, ill-defined fear that his life was torture to him. He was of magnificent physique, had always been healthy, had worked hard, and was very successful, but of late years had fallen into this horrible nervous condition. There was no *prostration;* he could, and did, walk ten miles without fatigue; he was robust, and presented no obvious evidences of ill health.

His friends (even his wife) laughed at his complaints; called him a "crank;" said he was "losing his nerve." This man is now suffering from an aggravated case of *nervous exaltation*, and if he does not devote himself to its correction, as sure as the sun rises he will ultimately descend into a state of prostration equal to his present exaltation, with a nervous system so worn out from its long-continued excessive work that it may be beyond the possibility of repair.

His case is a curious one in many respects. I have said that he is strong and vigorous; he offers no evidence of organic disease *as yet;* but he contends that he is unable to control himself; the receipt of a letter, the ringing of a telephone bell, a knock, a step, a noise, any sudden impression will throw him into a general quiver; he will tremble and shake all over *internally;* while outwardly to the observer he is perfectly composed and tranquil. Indeed, frequently, without any external producing cause, these internal tremblings or quiverings, with a vague, ill-defined, horrifying certainty of impending calamity, will suddenly seize him, last for from five minutes to half an hour, and disappear as suddenly as they came. This condition of internal tremor is always more pronounced in the early part of the day (after a good night's sleep, for he sleeps well), and wears away as the day advances, particularly if he has a long walk, until by evening he is quite himself. Owing to this trembling, quivering, conscious lack of self-control this man fears his office and his work, but when by a resolute act of will-power he manages to force himself into it, his capacity is equal to the demands, and for the time his infirmities vanish, to return again with relaxation from work.

This man's friends assert that his ailments are imaginary. This is a grievous and dangerous mistake. This man's condition is transparently clear to me, and it is most interesting. He has inherited a vigorous nervous system, capable of the production of immense quantities of nervous force or "vital steam;" he is ambitious; he *drives* his nervous system to produce force for the accomplishment of his ambition; his nervous system is capable of responding and does respond to the demand; not only so, but, stimulated as it is, it acquires the habit of constant over-production; when engaged in the work of his profession the amount produced is consumed by the work performed, and he feels well; when the demand ceases the production continues, and upon the slightest provocation this excess is discharged, giving rise to the symptoms already detailed, just as the clouds must discharge their excess of electricity as lightning. Sometimes this excess becomes so great that it must be discharged spontaneously without the provocation of any external cause, and such discharges are always followed by a period of relief, just as a thunder-storm always relieves the oppressiveness of a sultry and depressing atmosphere.

In the early part of the day his discomfort, unrest, uneasiness, terror is the greatest, because the storm is brewing; during sleep his nervous system has continued its excessive production of force, steam, electricity, call it what you may. He awakes with a system surcharged with this force, and it must be discharged before he will have relief; several explosions occur in the shape of the paroxysms that I have described; his walks or other work consume the balance of the excess, and by afternoon he is in a fairly normal condition. This is an extremely interesting case, in which I can venture the positive prediction that, if not corrected, possibly incurable nervous prostration will ensue.

So much for inheritance and work and society as predisposing and exciting causes of derangement of the nervous system.

Now, I am frequently asked whether disease or disorder of some other organ will not or does not cause disease or disorder of the nervous system. I have already expressed my inflexible belief that with a typically sound nervous system disease or disorder of any part of the body is impossible; but I have also claimed that very few so-called civilized nervous systems are typically sound; hence I can readily understand how disease of some other organ can so react upon the nervous system as to make obvious its hitherto latent imperfect condition without denying one iota of the all-pervading influence of the nervous system upon which I have been insisting. Thus I can understand how long-continued imprudence in eating and drinking may so impair the function of digestion as to react upon and disorder the nervous system,—that is to say, to make *manifest* its disorder, when this obvious disorder will in turn perpetuate and intensify the stomach derangement, the one acting reciprocally upon the other; but, if I am rightly understood, it will be obvious that the stomach trouble has originated in the nervous system, because had the nervous system been perfect the stomach trouble would have been impossible. If dyspepsia is the result of hurry, worry, and overwork, have we not already seen that this overwork has diverted nervous force from the stomach; hence when the dyspepsia becomes manifest is it not because the nervous force requisite for the digestion of food has been diverted from this channel? is it not because the nervous system is not capable of properly regulating this function? *has not the dyspepsia had its origin in the nervous system, and is not the radical cure to be looked for in a restoration of the nervous system to its normal condition?* and does not this same process of reasoning apply to disease and disorder of any and every organ or part?

A very beautiful lady from Washington, so beautiful that as she commenced to show the ravages of time cosmetics were requisitioned to hide them, came under my observation suffering with hardening of the posterior spinal cord and all the symptoms dependent thereon; many different opinions had been expressed by different physicians as to the nature of her disease. No wonder, because evidences of disease of nearly every organ in the body were present, and each physician would assign the disease to the particular organ the symptoms presented by which made the greatest impression upon him. Every organ was deranged, but the cause of this general derangement was a prior derangement of the nervous system, caused by the lead in the cosmetics. In a case like this no one would, for a moment, question the influence of the disordered nervous system in producing the secondary and dependent disorders of the other organs. Why does not this same influence hold good in all diseases?

Let us consider the phenomena of inflammation; the fundamental, essential, absolutely necessary condition of inflammation is that there must be an excess of blood in the inflamed part; blood circulates in blood-vessels which are elastic, distensible, and contractible, the calibre of these vessels being automatically regulated by the nervous system so that they will convey to any part or organ just the amount of blood requisite for its needs, no more and no less; if, then, too much blood is necessary for inflammation of a part, and if too much blood implies dilatation of the blood-vessels of such part, and if the calibre of these vessels is under the control of the nervous system, is it not absolutely necessary for the nervous system to become first deranged before the calibre of these vessels can become enlarged? Is it not obviously illogical to suppose that the vessels dilate first and implicate the nervous system secondarily? Hence, is it not unquestionable that all inflammatory diseases must imply a previously deranged nervous system, without which too much blood in an organ or part would be an impossibility. Admitting this, great force is added to my argument, as inflammation is an accompaniment of so many diseases.

Now we come up to the formidable question of germ-diseases: Are they caused by a disordered nervous system? Yes,—that is to say, while the disordered nervous system is not the active, working cause, it is because of the disordered condition of this system that the germs are capable of producing the disease; while it is, I believe, upon the nervous system that the germs make their first assault upon their entrance into the body. It is well known that upon the introduction of disease-germs from without a warfare at once commences between the conservative forces of the body and the destructive power of the germs, and that the development or abortion of the disease will depend upon which influence or faction gains the victory.

Well, now, what is this conservative influence of the human body? What is this power fighting against the evil forces of the germ? Does it reside in the stomach, the liver, the bowels, the heart, the lungs, or the kidneys? Have I not already proved that these organs are merely agencies, intended for and capable only of manifesting a force transmitted to them from elsewhere; and have we not seen that this force is originated in the nervous system? Hence, is it not obvious that if the power or force of these germs is to be vanquished, it must be accomplished by a force originating in the nervous system; does not, therefore, the existence of a germ-disease logically necessitate the previous derangement of the nervous system, which, if not deranged, would have furnished the power necessary for the destruction of the germs.

If the nervous system be already much deranged, the germs will have an easy victory, while if it be in fairly good condition, the first attack of the germs is upon it and through it upon the body at large. The chill, fever, headache that usher in so many of the germ-diseases furnish ample proof of nervous derangement.

The suddenness with which the grippe seizes one and the infinite variety of nervous derangements following in its wake must convince every one that the influence of the grippe-germ upon the nervous system is profound. Why is the same not true of all germs? No matter what theories may be advanced to account for immunity; no matter what may be claimed as the agency or force or condition that confers immunity upon some while others succumb to the power of the germ, must we not ultimately look for an explanation of this immunity or susceptibility to the condition of the nervous system, since this system alone possesses the power of originating force, all other systems or organs being but agencies for the manifestation of this force.

It is held by many physicians that consumption of the lungs really has its origin in long-continued derangement of digestion; but if indigestion has its origin in the nervous system, then must we fall back upon derangement of the nervous system as the first cause of pulmonary consumption.

Koch has asserted that the juices of a healthy stomach will destroy the germs of cholera, and that he whose stomach is normal can swallow these germs with impunity. If the nervous system is normal the stomach must be normal, and *vice versa;* hence, it is really dependent upon the condition of the nervous system whether or not one who swallows the germs of cholera will develop the disease.

Do you mean to assert, asked a distinguished lawyer, to whom I had read this last paragraph; do you mean to assert that if a man whose stomach is in good condition deranges it by a debauch, that this derangement is due to the action of the alcohol upon the nervous system? I certainly do; and this gentleman fully agreed with me when I reminded him that this derangement of the stomach is essentially an inflammation of this organ, and called his attention to the proof that I have furnished, a few pages back, that, without a previous derangement of the nervous system, inflammation is an impossibility. Thus I could go on and indefinitely cite illustrations to prove that, whatever may be the cause of the diseased or disordered condition, the primary action of this cause is exerted upon the nervous system, and through it upon the body at large.

I am convinced that many fatal errors in diagnosis and prognosis result from attaching too much importance to the evidences of organic disease that may be discovered, and too little importance to the influence of a disordered nervous system upon this organic disease.

Thus I have living to-day, in good health, a patient who, seventeen years ago, was told by four eminent physicians that he could not live six months.

He did present some of the usually accepted evidences of organic disease of the kidneys; a disordered nervous system intensified the *obvious* evidences of kidney trouble; these evidences were accepted; the condition and influence of the nervous system was overlooked and a fatal prognosis was formulated. I recognized and appreciated the influence of this disordered nervous system in causing many of the symptoms that were present. I corrected the disorder, and this man is now practically well.

Is it any wonder that I am so firm in my belief in the all-pervading influence of the nervous system when thousands of cases like that just quoted leave me no possible room to doubt the correctness of my conclusions.

I have written this article for the purpose of reminding the physician of this universal influence of the nervous system.

We are accustomed to regard the nervous system as an entity, to be considered by itself; we speak of "diseases of the nervous system," and refer them to specialists, but we consider them only when obvious evidences of such diseases are manifest. The aim of this article is to induce the physician to inquire into the condition of the nervous system in all cases that come before him, when he will be amazed to see how almost constantly he will find a disordered nervous system to be the cause of, and restoration of this system to be the remedy for, most of the ills of humanity.

From what I have already said you will not be surprised when I contend that a disordered nervous system is the cause of "dipsomania," or uncontrollable desire for strong drink; that this disorder is generally a prostration of the nervous system, and that the only rational way to cure this uncontrollable desire for strong drink is to restore the nervous system to a normal condition. This position seems to me so logical, so unassailable, so impregnated with common sense that it should be accepted without further argument. Let me, however, give the process of reasoning by which I have reached this conclusion.

While I can understand (without, however, defending) the action of a man or woman, social by nature, who may become intoxicated, and can reconcile this action with the existence of a fairly normal nervous system, I cannot understand how any sane, reasonable, well-balanced man or woman can willingly allow themselves to be more or less continuously under the influence of alcohol; hence I contend that they do not *allow*, but that they *cannot help it*. Many physicians now recognize alcoholism as a disease rather than a vice. In this view I fully concur, and contend that the cause of alcoholism is to be looked for in a disordered nervous system, and that the cure is to be looked for only in the restoration of the nervous system to a normal condition. No one can deny that the excessive use of alcohol has a deleterious effect upon the nervous system. Alcohol is a stimulant; all stimulation is inevitably succeeded by depression; the pendulum must swing as far in one direction as it does in the other; any reasonable man or woman will admit that if the nervous system is stimulated by alcohol there must follow corresponding depression, unless the stimulating agent is being constantly introduced. But even then the time will come when "use has bred tolerance," and the stimulation is no longer secured.

The greatest drunkard will admit that the liquor he consumes is injuring him, but he will plead inability to resist. The inability is real; it is not a weakness over which he *can* exert control if he would; it is an absolutely uncontrollable weakness dependent upon a disordered nervous system. It is a lack of will-power, I admit, but we have already seen that will-power is a product of the nervous system, and how is it possible for an abnormal nervous system to generate normal will-power?

I have treated and cured many drunkards, but I have invariably found disordered nervous systems to be the cause of the trouble, and correction of this disorder to be the only radical and permanent method of cure.

An extremely interesting and practically valuable application of my ideas as to the all-pervading influence of the nervous system is the utilization of these ideas in prolonging the lives of old persons. The human mind has been ever seeking an "elixir of life;" with all its troubles, with all its trials and tribulations, with all its annoyances and worries, very few of us are anxious for our lives to end; regardless of health in our days of vigor, when the infirmities of age creep upon us and we are thereby warned that the end is approaching, how eagerly and earnestly do we grasp at any promise of renewed youth or prolonged life and increased vigor.

All the promises of rejuvenation, all the proposed "elixirs of life" that have been offered from time to time have failed to produce the fruit of promise, because they have not been based upon either common sense or science. They have been the offspring of theories, and have failed to stand the test of practice. Of course, rejuvenation, the youthfulness of forty in the man or woman of eighty, the turning backward of the wheels of time, perpetual youth, everlasting life, is all nonsense, and no sane person seriously entertains such thoughts, *but that the lives of many old persons can be greatly prolonged and their vigor increased by the application of my ideas in reference to the all-pervading influence of the nervous system, I have proved in so many cases that not a shadow of doubt can exist as to this fact.* Before explaining my ideas I will quote from a letter recently received from a lady more than 80 years of age; premising that when this lady came under my care she was very weak, feeble, incapable of any exertion, and considered that her span of life was nearly run, as most feeble persons passed 80 years of age naturally would. She writes:

"*I am sure you will be glad to know how much I have benefited by your treatment; the family all say the change is very great for the better; they say I am so* VIGOROUS; *my life-long trouble with constipation is greatly relieved, and my back, which last winter caused much suffering, is quite strong in comparison. I always thought my liver was torpid. Now the passage is very satisfactory.*"

This concise, convincing, and eminently satisfactory statement I can parallel with hundreds of others. My experience with this lady will serve to demonstrate my ideas. I was called to treat her for an acute attack of indigestion, and was surprised to find in what good order all of her organs were for one of her advanced age. Her organs were not more than 60 years old, so to speak, while her nervous system was more than 80; her organs were capable of much more vigorous work than they were doing, but her nervous system was not capable of making the nervous force or "vital steam" that was requisite; all of her organs were willing and able to do more work if they could be supplied with more steam. I put the nervous system in condition to make more steam, with the result quoted.

My experience has convinced me beyond the shadow of a doubt that thousands of old persons die unnecessarily soon, and that thousands more are unnecessarily decrepit; they die and they are decrepit because the nervous system does not make steam enough to keep them alive and to keep them vigorous. No matter how perfect may be the various parts of the locomotive, if the steam pressure be low it can but crawl, and it is dead if the steam-supply entirely fails.

There are thousands of old persons slowly and wearily *crawling* towards the grave who are perfectly capable of many years of comparatively active and vigorous life did they but have enough steam to enable their organs and muscles to do the work of which they are capable. Give some liquor to a weak, elderly person, and you give them temporary increase of strength, because the liquor has stimulated the nervous system to make more steam, but the reaction comes, and the depression is equal to the previous stimulation.

Feed and properly treat the nervous system and you increase its ability to make steam in a natural and permanent and lasting way. You have not *stimulated for the moment, but have permanently repaired the nervous system* and increased and prolonged its ability to furnish steam for the human machine, whereby you have prolonged the lives and increased the vigor of those so treated.

Ideally, all parts of the human machine should grow old together, so that, ultimately, like Oliver Wendell Holmes's famous "One-Horse Shay," that ran for one hundred years and a day, this machine should have "worn out" all over. Very occasionally such ideal instances do present themselves, but because of the reasons already given it almost invariably happens that the nervous system breaks down while the other organs are in fairly good condition.

Even though the organs of an elderly person may not be sound, even though they may be degenerated, even though they may be the seat of organic disease, is it not logical to contend that the measure of duty that can be expected of and derived from them will depend upon the ability of the nervous system to produce vital force, and, such being the case, must it not follow that if we can so build up the nervous system as to enable it to produce more force we will prolong the lives and increase the vigor of our elderly patients.

One more idea, and I am done. How frequently are we called upon to treat children who are disordered by inheritance. I do not refer to surgical defects that can be corrected only by surgical interference, but to defects in the physical condition of the organs and parts, as the result of which the child is puny or delicate, lacks vigor, and is a source of anxiety to the parents. In such cases we will do well to look into the condition of the nervous system, and by persevering treatment thereof endeavor to improve and invigorate the whole body, the condition of which we have seen is dependent upon the condition of the nervous system.

I am done. My aim in writing this article has been to call attention to the supreme influence and importance of the nervous system; we all know and are ready to admit this importance and influence, but are apt to lose sight of it, or to practically belittle it, in our daily work.

The burden of my thought is that with all of our patients we should look into the condition of the nervous system (when we will be surprised at the frequency with which we will find it deranged), and that, in addition to our other remedial measures, we should direct our attention to the restoration of this system to a normal condition.

Lest I may be misunderstood, I must repeat that I am not advocating treatment of the nervous system to the exclusion of other conditions that may be present. By no means. We must, as heretofore, relieve any symptoms or disorders that may be found; but *in addition thereto we should examine into and treat the nervous system, and we should be particularly careful to accurately estimate the influence of a disordered nervous system upon the symptoms of organic disease, that we may not attach undue and unwarranted significance to these symptoms.*

In conclusion I must add that the ideas herein expressed are not theories; whatever may be thought of them and said of them, I can only assert that they have stood the test of practical experience. For years I have based my practice upon these ideas, and have thus conclusively proved that my views are correct.

To any of my professional brethren who question my contentions and deductions, I can only say that I am willing to relieve them of any of their "*chronic cases*" that they may be anxious to dispose of. I welcome such cases. I am always glad to have a patient who has for years been going from one doctor to another without relief. I am not foolish enough to say that I can cure them all. By no means. Such an assertion would be ridiculous and would savor of quackery, but I do firmly contend that any physician who will adopt my ideas and put them into practice will find that many obstinate cases that have been baffling him for years will commence to yield and give him good results.

1625 Pacific Avenue, Atlantic City, N. J.

Butter in Plaster of Paris.

There seems to be no limit to the ingenuity bestowed upon the devising of means for accomplishing the transport of the perishable product of distant climes to the English market. A new method, described in the *Australasian*, is that packing butter in a box made of sheets of ordinary glass, all the edges being covered over with gummed paper. The glass box is enveloped in a layer of plaster of Paris a quarter of an inch thick, and this is covered with specially prepared paper. The plaster being a bad conductor of heat, the temperature inside the hermetically sealed receptacle remains constant, being unaffected by external changes.

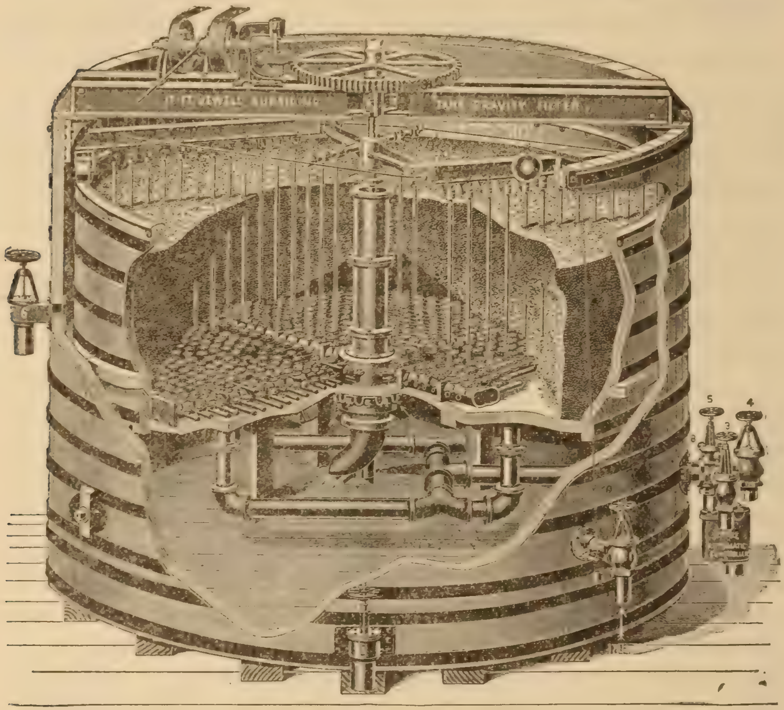
Rapid Mechanical Filtration at Lorain, Ohio.

BY A. G. HUMPHREY, M.D.,
Galesburg, Ill.

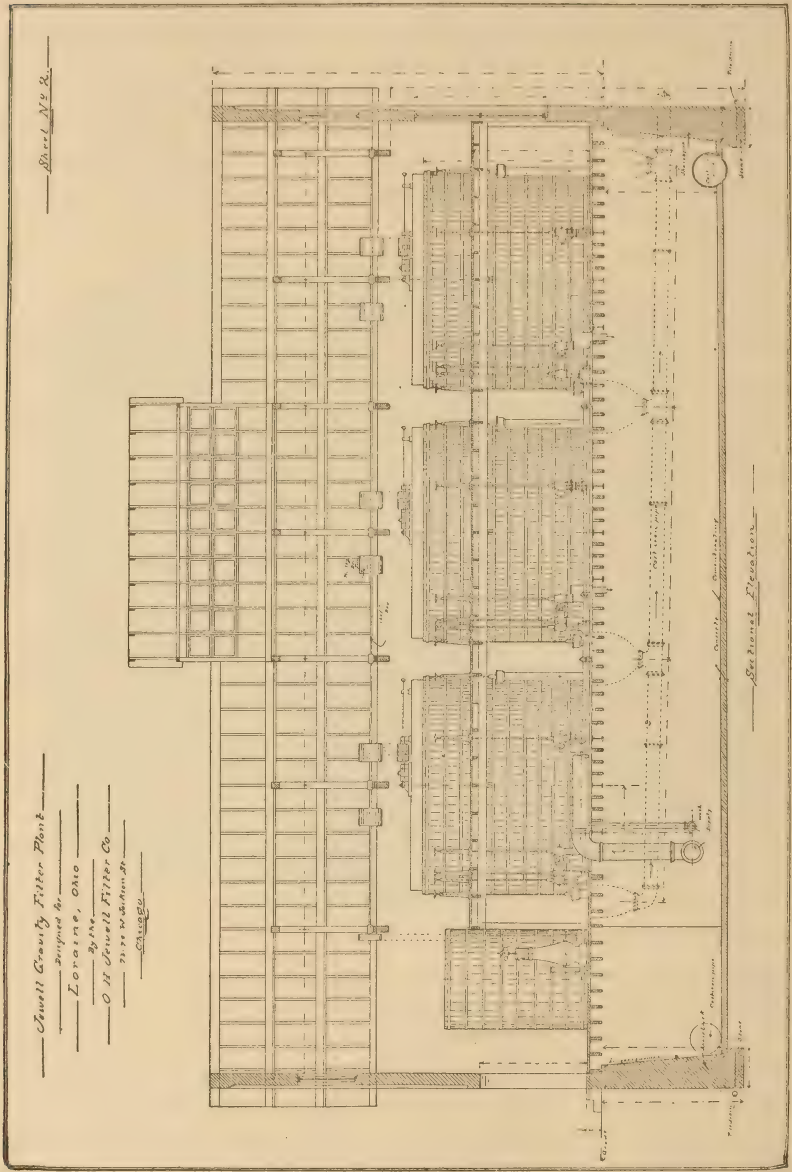
THE following notes taken by the writer during a recent visit to Lorain, Ohio, for the purpose of examining the Jewell gravity filter plant installed at that place, are likely to prove of interest to the readers of THE ANNALS OF HYGIENE,—for the reason that the filters referred to are the largest of the open gravity pattern which have anywhere been constructed and put in successful operation, having filter-beds seventeen feet in diameter; and also because bacteriological examinations of the effluent thus far show as high a degree of purification or even higher than result from the best examples of the European sand-bed process. It is known to your readers that the rate of filtration per acre of the European or sand-bed filters is usually in the close vicinity of 2,000,000 gallons per acre per twenty-four hours, while the American rapid mechanical process of filtration permits a rate of 120,000,000 gallons or more per acre in twenty-fours, or not less than sixty times the speed of the European process. If this enormous increase of capacity for a given filtration area can be maintained with a standard of purity for the filtrate, which is even higher than the slow European sand-bed process, it is evident that a great economic gain has been made, as the first cost of a mechanical plant is usually less than half that of the sand-bed plant (exclusive of cost of the ground occupied by the latter), while the cost of operation of the mechanical plant is always found to be less than the cost of operating the sand-bed plant, when the interest charges on the increased first cost of the latter are taken into consideration, as they must be.

The Jewell gravity filter plant at Lorain, Ohio, consists of six open mechanical filters, constructed as shown in the accompanying sectional view, and arranged in two rows upon foundations as shown by the two side and end views of the filter building which are herewith submitted.

The water to be purified is taken from Lake Erie, which is rather shallow along its southern shore for a considerable distance out, and hence is liable to become quite roily whenever the water is disturbed by winds. The Black River also discharges into Lake Erie a few hundred feet away from the intake of the Lorain water-works, and as it flows through a populous region and receives the sewage of several small towns it is a menace to the health of the population of Lorain whenever the wind is in a direction counter to the prevailing lake currents. The pumping station of the Lorain water-works is situated within one hundred feet of the filter plant, and the water to be purified is first pumped by low service pumps to the filters, a total lift of not to exceed forty feet. After filtration the now thoroughly purified water is caught in the large, clear-water receptacle, containing about 280,000 gallons, which extends under the entire filter building, and from thence it flows by gravity to the suction of the high service pump which distributes it to the town of Lorain. The operation of the filters is as follows:

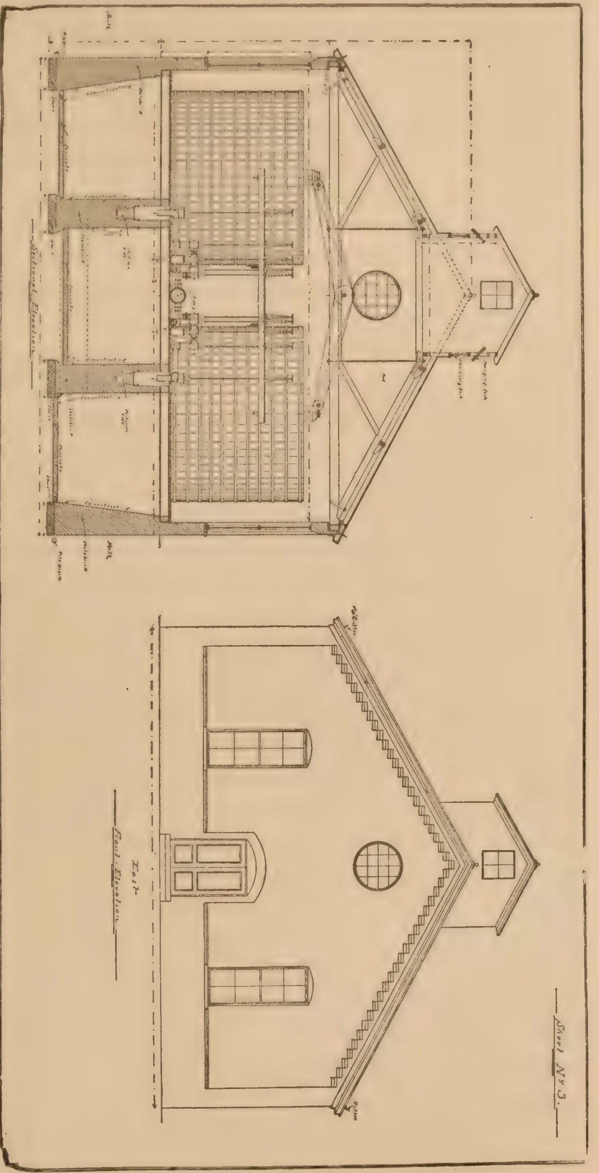


The water to be purified, after having been treated with a small quantity of a coagulant, such as sulphate of alumina (ordinarily not to exceed an average of one grain per gallon), passes into the subsiding chamber shown in sectional view as occupying the whole lower half of the filter, and representing a body of water eighteen inches in diameter by seven inches high, or say a little over 13,000 gallons. Taking the rate of speed at which the filters are operated, say 22,000 gallons per hour each (or a total of 3,000,000 gallons per day for the entire plant), it will appear that the unfiltered water will be delayed in the settling-chamber of the filters approximately thirty-eight minutes, which affords the requisite time for thorough combination of the coagulating agent with the unfiltered water, and permits the deposition in the settling-chamber of a large proportion of the impurities in the water, both coarse and fine. After this period of delay and retarded flow in the settling-chamber the water passes upward through the central pipe shown in the sectional view of the filter, and spreads over the filter-bed, which occupies the upper half of this filter. The filter-bed is four feet in thickness, and is composed of fine silicate sand which is mined for this purpose in Minnesota. Passing downward through the sand-bed and leaving its impurities on and in the sand, the now purified water is collected by an extensive system of pipes fitted with brass and aluminum bronze screens (about nine hundred to each filter), and finally falls into the clear water receptacle underneath the filters, whence it is pumped to the consumers. The principle and apparatus for washing the filter-bed when it becomes clogged or foul with arrested impurities seemed especially well adapted to the purpose. A reverse current of filtered water under the domestic pressure in the city mains is sent upward through the sand-bed by means of the collecting system of pipes and strainers referred to, and this distribution of wash water is so uniformly applied to all parts of the bed that the same is substantially floated, and made so liquid and fluid that on thrusting a stick or the end of a broom into the sand-bed while it is being washed, its presence is not felt and it offers no resistance to the object thus inserted. While the process of washing is going on (which usually requires from five to eight minutes) the agitating bars are rotated through the bed by a special small engine supplied for that purpose,—the object being to break up and disintegrate any lumps of mud which may have formed on or in the bed and permit its being washed out. The operation of washing is noted by the operator, who stands upon a platform running the whole length of the double row of filters, some four feet from the top, and when the wash water ceases to be visibly impure the wash is stopped and the filter is ready to resume its work.



The filters are contained in tanks made of dressed cypress lumber, which is said to be as durable for such purposes as steel,—

though the latter material is sometimes used for the construction of these tanks when preferred. The appearance of the plant indicated careful and exact workmanship, and it seemed to be giving excellent satisfaction to the people of Lorain at the time of my visit.



This plant was guaranteed by the makers to effect an average reduction of not less than ninety-seven per cent. of the bacteria in the unfiltered water, which is probably a higher guarantee of performance in this respect than has ever been given by any filter manufacturers heretofore. The plant was started in the latter part of February, and up to the present writing, March 11, there have been taken on different days sixteen samples of the filtrate for bacteriological examination by Dr. A. J. Baumhardt, bacteriologist for the city of Lorain. Dr. Baumhardt's reports on these sixteen samples shows average bacterial reduction of ninety-eight and twenty-three hundredths per cent. (98.23), being considerably in excess of the guarantee of the contracting Company. It is to this fact that the attention of those interested in the purification of municipal water-supplies is especially directed, as it indicates a strong probability that hereafter it will not be necessary to advocate the large outlay involved in the construction of the expensive European sand-bed filters in order to obtain water of an almost unprecedentedly high degree of purity.

The excellent results which are being obtained at Lorain are, in the writer's opinion, largely due to the delay in the flow of the unfiltered water caused by the interposition of the settling-chamber, which permits thorough coagulation and precipitation to take place, and also the considerable expanse and depth of the filtering medium, which permits of a rapid, but not an excessive, rate of filtration. The writer understands that the further results of the bacterial examinations at Lorain will be furnished to the scientific public as they progress.

Since writing the above I have received the following statement by Dr. Baumhardt, of Lorain, Ohio, an expert engaged by the city of Lorain to make a report on the Jewell filter recently put in use.

Date.	Bacteria in unfiltered Lake Erie water per cubic cent'm.	Bacteria in filtered Lake Erie water per cubic cent'm.	Average per cent. of reduction by filtration.
March 2, 1897 .	1918	52	97.30
March 2, 1897 .	2353	32	98.64
March 2, 1897 .	1526	10	99.35
March 2, 1897 .	1460	28	98.20
March 3, 1897 .	5184	32	99.39
March 3, 1897 .	4128	60	98.55
March 3, 1897 .	2297	56	97.60
March 3, 1897 .	3575	40	98.89

On March 2, 1897, the water pumped was 2,664,930 gallons, and by the above figures 7,100,680 bacteria per gallon were removed by the filters, or a total for the day of 18,922,761,853,500 bacteria.

On March 3 the water pumped was 2,722,028 gallons, and by the above figures 14,189,965 bacteria per gallon were retained by the filters, or a total for the day of 38,625,482,049,020 bacteria.

Food for Thought.

BY GEORGIA MERRIMAN, M.D.,
Bucyrus, Ohio.

MUCH of the *medication* of the nineteenth century is and possibly all of the twentieth century therapeusis will be along the line of nutritive substances, and he who stays the sword of destruction must minister to the physical man such food as he is capable of digesting or the digestive process must be accomplished outside of the man. "That we often fail to prepare foods in this country in such a way as to preserve their values is shown very conclusively by the success that follows the chemical preparation of raw materials for home consumption. We have become perfectly familiar with predigested foods when put up at so much a bottle or can. The reason why America is the home of these foods is because the stomachs of so many people have been ill treated from their birth, and even in early youth they become familiar with prepared foods. The great apostle of temperance, Frances E. Willard, claims that back of the drink traffic "lies a grave fault of malnutrition." This seems to imply carelessness in the *domestic machinery* or a lack in either the *head* or *heart* of the manager of that department. If this be true, here is surely something we cannot lay to man's maladministration, and, my dear sisters, I am afraid that we will have to plead guilty of gross ignorance and carelessness in the performance of culinary duties. How many women have ever given a thought or ten minutes' study to cooking as a science. Has not the extent of your research been to find out how some other woman baked angel-food or John's mother made her pumpkin-pie? Come and let us reason together on new and better methods of doing *old* homely duties while we are waiting to cast our first ballot for the school-board. The coming man may dip his plutocratic epidermal tissue into a disinfected liquid, and by his diurnal plunges free his external surface from all infusorial life; but if we, by reason of our unscientific preparations of food, fail to properly nourish the man, and constantly offer for his delectation materials which he cannot assimilate, are we not in a measure responsible for much suffering as well as much ill temper? for, laugh at it as you will, a good dinner that nourishes and stimulates one does produce a feeling of genuine good nature and companionship.

Henry Ward Beecher once said, " When I see a man nodding in my congregation, instead of wishing for a stick to stir up the man, I say, Henry Ward, what's the matter with your sermon that it puts men to sleep?" Now, ladies, when your husbands bang the door, leave their slippers in the middle of the floor, talk about French cuisine and forget their good-by kiss, is it not time for you to inquire how many calorics or units of heat those fried potatoes you had for breakfast contained? and when your sturdy, growing boy, fresh from school, where every new blood-corpuscle in his brain has gone into that example in long division, blusters in, overshoes and all, making for the pantry, is it not time for you to know what kind of food can supply the used-up tissue-building material in the quickest time? and do not leave fruit-cake and pickles convenient, simply because Fred likes them best. Foods should not be merely palatable but should be nutritious, furnishing each person with the necessary energy to perform his part of the world's work, whether it is done in the infant class of a district school-house, on the floor of the stock exchange, in the halls of the Senate, behind a type-writer, at a desk, or before a sewing-machine. The medical profession has shown wonderful progress in its appreciation of food values and effects. Side by side with a prescription the doctors leave instructions as to the kinds of food necessary. Many men and women can testify to consulting physicians who look at them and say, " *You* do not need medicine, but you do need different kinds of food from those you are eating. You will be as well as anybody if you will follow the directions in your food and exercise." But comparatively few are able to follow the doctor's instructions in the matter of foods, because of the ignorance of the cooks of the proper method of cooking food, so as to retain its nutritive value. "The one scientific fact which house-keepers must learn," says Professor Atkinson, "is that science and invention have up to this time been almost exclusively devoted to the production and distribution of food-material, while the science of consumption, which includes the conversion of the food-material into food, has been wholly neglected." The best coal for a locomotive is that which will enable it to haul the greatest number of tons over the longest distance. The best food for man is that which will enable him to do the most work in a given time and keep him in perfect condition for further work.

Food is the only means by which the physical and mental power of man can be sustained. It behooves us to make the most of the supplies of food which are at our command. The best coal is that which will burn freely but not too quickly; that which contains only a moderate amount of ash or stone to clog the fire-grate and so to prevent a sufficient draught, the excess of ash always means a heavy weight of useless material. The best food is that which is freely digested, but not too readily assimilated, that which contains only a modicum of woody fibre and other indigestible and burdensome material.

How shall we know what is the best food? Experience has taught all the different races of men what are the effective combinations, as instinct taught other animals. The foods of different races, or of the people of different lands of the same race, will be found to be in the main the best foods attainable at the lowest cost; but as man becomes civilized and gains in wealth he loses his instinct and he loses his health at the same time. Therefore, when not forced by circumstances and conditions to make the right choice without an intelligent comprehension of the subject, he must learn to apply his *reason* to the choice of his food. If regard be given to the greater number of cookery books, it will be observed that the instructions given in them may be divided into two distinct parts, first, combining or mixing food-material; second, subjecting this material to the application of heat. These instructions consist in directions for making the choice of food materials and for measuring them out in certain proportions and combining them in certain ways. What will be the result of these combinations depends much more upon how they are cooked than upon the method or proportion in which they are combined. Cooking consists in applying heat to the chemical conversion of these food-materials, a work which corresponds to that of the chemical laboratory in the dissociation and synthesis of the subjects that are dealt with in chemistry. The true problem in cooking is to substitute what may be called predigestion for a part of work of the digestive organs, in order to enable them to assimilate all that is suitable, and reject that which does not nourish. This statement suggests a wide chapter in chemical physiology. Before dealing with the science, we may define the art of cooking as consisting in applying heat to each of these subjects in such a way as first to render it digestible, so that its nutrient properties may be assimilated in true proportion in the human system; second, to render it appetizing by the development of its own specific flavor; third, to combine different kinds of food-material in such a way that each will render the other palatable; fourth, to remove certain portions which may not be palatable or digestible after the first application of heat, either as a waste, like bone, as excess, like much of the fat that may be used for other purposes, or as a woody fibre in many vegetables; fifth, to add to the essential elements salt in its due proportion in almost every process, and sugar in some combinations, and other condiments, spices or flavorings in such a way as to develop rather than to disguise the true flavor of the principal food-material entering into each dish.

The chief fault in cooking is cooking quickly at a high and varying temperature. One of the principal causes of indigestion is the chemical change which is wrought by a high heat upon the fats of meat. "Fat under a prolonged exposure to a strong heat undergoes decomposition, attended with a production of fatty acids and an acrid volatile product known as acroline, which may cause derangement of a weak stomach."

This evil can be avoided by slower methods of cooking. I have become satisfied that at least half the prevalent dyspepsia is due to semi-starvation, because the victims cannot digest badly-cooked food. I am also well satisfied that if any shrewd saloon-keeper, who wants to make more money, will make strong beef-soup from the heads, palates, and well-cleaned hoofs of cattle or lentil-broth from lentils, it will cost him less than his whiskey and beer now cost, and, if put on tap along-side either, each will sell freely in place of the liquor or, in addition, because more than half the craving for stimulants is due to want of well-cooked food. The "saloon" will have a better reputation if this suggestion should prove to be profitable in practice.

You may ask, What is the best food to eat? My reply would be, The best cooked food of every kind is the best to eat; the best food-material when badly cooked is not fit to eat. The choice of the best food cooked in the right way must be left to each person. It will vary with the work which is to be accomplished with the special taste and digestive power of each individual, and with other conditions.

Professor Atkinson, who is now recommending the establishment of food laboratories in connection with the experiment stations of the Agricultural Department, writes, "Having become interested in the theory of nutrition many years ago, it lately occurred to me that the great mass of information which had been recently put into a thoroughly scientific form in this and other countries ought to be applied to common practice. In scientific terms the art of cooking consists in the application of a *regulated* degree of heat to the conversion of food-material into appetizing and nutritious food. In other words, I reached the conclusion that the art of cooking should be brought into such simple form and rule that any intelligent person, with little or no previous experience, should become qualified to convert good food-material into good feeding, whereas, in the present common practice, nothing could be worse than the bad results commonly brought upon the table from the domestic kitchen. Science seemed to have stopped outside the door of the kitchen. My investigations showed me that the way to spoil meat was to boil it; the way to cook an egg was not to boil it; the way to render the best meat indigestible and to convert the finest flavor into bad smells was to subject it to the barbarous processes commonly practised at an excessive heat on the iron stove or range. I learned that slow cooking at a moderate temperature is the only rule in ninety-nine cases out of a hundred. After observing the irremediable faults of all our iron stoves and ranges, it occurred to me that the right way to apply heat to food-material would be to box it up in a non-heat-conducting chamber to which I could convey heat by measure and maintain it at any suitable temperature. This has been accomplished. Heat can be boxed up under an empty half barrel under a common stable-bucket, under a soap-box lined with tin, or in an oven to which heat is conveyed through a hole in the bottom.''

The principle has been demonstrated, the minor details will occupy another paper.

Nourishment.

The little maid had been ill, and had struggled through the early stages of convalescence. She had taken ''nourishing'' broths and ''nourishing'' jellies until her soul was weary within her. One morning she electrified the family by sitting bolt upright in bed and saying, ''I want you all to take notice. I am not going to take any more nourishment. I am hungry and I want my meals, and not another mouthful of nourishment will I eat.''

The Physician and his Profession.[1]

BY J. K. MILLER, M.D.,
Greeley, Colo.

WHILE the theory and practice of medicine has not been reduced to an exact science, yet it has always been regarded an honorable, legitimate profession. In point of importance or respectability it is scarce second to any other profession. Theology is generally placed at the top of the list because its specific character is of more vital importance as the soul is of greater import than the body. However, every true physician finds at times that the interests of both soul and body are placed in his hands. As the fading eye looks pleadingly towards him, and the bloodless, trembling hand reaches out beckoning for some word of good cheer, that the dark, dark valley might be brightened, he realizes that his patient, who has relied upon his skill as a physician, now appeals to him for something more, something not contained in the chest of medicine by his side, for the body can respond no longer; something to supply which he must draw upon his inner self. Realizing the gravity of the hour, he turns to scan the very depths of his soul for that which this confiding one might appreciate. Something that will apply to the immaterial, the immortal part, which now hovers over the confines of the spirit world. It is at such times that the physician is brought face to face with the fact that the practice of medicine does not wholly consist of the dispensing of drugs and the collecting of fees. Though he may shirk these important moral features of his chosen profession, yet in doing so he throws off a responsibility truly his own, one which cannot be assumed by another; thereby denying himself the exercise of a last kindly office towards one who has tendered him desirable patronage and encouraged him in his work by many cheerful greetings.

Thus our profession is second to none in point of sacred responsibility, because it has to do not only with minor but the graver periods which occur in the human life. It is a matter of no small import to assume charge of affairs which lie so near the border-line of a fellow-being's earthly existence. So sacred is it that to toy with the health and life of another, either for gain or through carelessness, is a crime; and the wilful neglect to use all possible endeavors to stay the ebbing of the vital tide is felonous.

---

[1] Read before the Weld County Medical Society, February 22, 1897.

Notwithstanding these hallowed features of our vocation, the number which crowd in to fill the vacancies and to occupy the new field is like the mad rush where a new territory is opened for settlement. Ignorant and otherwise unworthy men thrust themselves forward for recognition by the profession, and hesitate not to flaunt their fraudulent illiteracy before the eyes of an over-patronizing public, whose support they seek with the air of a commercial transaction pure and simple. This heartless spirit is begotten of a love of gain. It tramples down all moral obligation and brings ill-repute upon our beloved employment. The man who enters the field of medicine simply for the money or social standing it may bring to him is unworthy of it. We would recognize an important business feature in it and willingly grant it all due consideration; yet to choose for financial reasons only a vocation which in its very nature is fraught with opportunities for helping unfortunate humanity—a vocation affording occasion for the exercise of every principle implied in philanthropy, be it financial, moral, or religious—is too narrow, too niggardly, to be deserving the respect—much less the confidence—of a civilized community.

Along with the increase of opportunity to manifest the spirit of helpfulness there is corresponding occasion for imposition. The laity in general still regard the science of medicine to be mysterious, both in point of application and operation. This relic of olden-time superstition impels them to exercise the greatest frankness in consultations with their medical adviser.

In the transactions of business in the marts and various places of trade persons may be exacting or politic, as fancy may incline, but when they come to deal with the stern, inexorable laws which concern the safety and well-being of their bodies, the whitewash crumbles from their facial expression; smooth meaningless words are unspoken and the veil of social or commercial hypocrisy is rent in twain. The physician is enabled to view the facts as they exist. Health and life are too valuable to misrepresent the conditions affecting them,—though in few instances false pride or guilt lead the patient in an attempt to deceive the one to whom she has applied for relief.

This bestowal of confidence, this opening of the secret recesses of the heart, set ajar doors closed to all others, and the patient becomes an easy prey to the doctor who is unprincipled. Reproach is often brought upon our profession because it has within its membership men of unscrupulous character, ever ready to impose upon their trusting patrons. To magnify or otherwise falsify a patient's physical trouble, in order to prolong treatment or extort a larger fee, is not only base but a violation of all just law. One guilty of such practices stands close beside the disreputable brother who, for a stipulated sum, enters into secret league with a disgraced patron, and by the aid of medical or instrumental means commits a heinous crime. All such immoral and unnecessary practice is foreign to the true realm of medicine, the whole influence of which should be to elevate and not tear down the moral fabric.

The doctor is by virtue of his work an important factor in the moulding of the laws of society. His obligation is in nowise limited to hygienic and sanitary conditions. To warn against those undercurrent habits and customs which directly and indirectly concern the life, health, and morals of the community is equally binding. Patients will come to the physician with their various troubles, many of which do not require medication, but he must advise, he must instruct, he must point out the dangers which beset the violation of both physical and moral laws. For want of opportunity no one else can do it; besides, no one else knows so well their tendencies and their results. After listening to the detailed narration of difficulties which burden and distress a worthy patient, he should explain away all imaginary evils, give kind words of counsel, or graphically depict the dangers of unwise or villanous procedures, as the conditions of the case may require. He should do this with as much interest and grace as he would assume in prescribing material remedies. It is not only a concomitant but a prime feature of his life-work, and it comes to him because it is his. This fact demands that he who chooses medicine as his vocation should have a high regard for moral law, which is the basis of all right living. He should be charitably inclined to his fellow-man, ever ready to give help of the kind indicated by the appeal.

These are facts which demand a breadth of character extending far beyond the limited domain of *materia medica;* facts which give to clinical confidence a fixed instead of a floating standard of value. As a coin is good for any legitimate demand made upon it, so the physician should be ready to respond to the exigencies of his patient, come from whatever source they may. The professional character resting upon this true basis will always receive the credit which it merits.

Head knowledge does not make the physician any more than physical strength the cunning workman; for

"Could I but own the universe
And with one hand hold heaven in span,
I'd still be measured by my soul,—
The soul's the measure of the man."

Were we simply diviners of disease, dispensers of drugs, and dividers of bone and muscle, our demise would cause indeed a very small vacancy in this world. We would stand out in unenviable contrast when placed along-side faithful old Dr. MacClure of "The Bonnie Brier Bush," in his sincerity towards the performance of duty. He dared to ford the Highland River in flood-time, in utter disregard for the loud protests of Sir George, who stood up in the cart by his side. While he recognized the superior professional skill of Sir George, he did not hesitate to thunder forth the command, "Sit doon; condemned ye'll be suner or later gin ye shirk your duty; but through the water ye gang the day." This strength of character in the old doctor came from an honest heart. It was manifest in word and act. The long years of faithful obedience and an earnest desire to respond with willing promptness to duty's every call, had given to the wrinkles of his face the refining touch of kindliest intelligence. Unwavering constancy and sacred devotion to his trust endeared him to the hearts of the entire "Fouk of Drumtocky" and greatly augmented his success in the results obtained from the administration of material remedies. His all-night watches by the bedside of Sanders showed a readiness to serve as nurse, when necessary. It also showed a willingness to lighten the burden of the anxious, dependent family; and when the morning brought the promise of recovery, so overjoyed was he that the bonnie wife was not a widow, nor the bairnies fatherless, that he went out into the fresh air of dawn, threw his outer garments to the east and to the west, and danced the Highland fling.

The very face and presence of this man was a benediction to his community, because of this readiness to share a liberal portion of the responsibility of others in times of need, and to enter as heartily into the spirit of their joys. While the folk waited until he died to show their high appreciation for him, the fault was not his. He still lived in the lives of those to whom he had been a true benefactor, even to the little ones, who never failed to bow him reverence with uncovered heads.

What is said of old Dr. MacClure should be merited, not only by the fathers of the profession, whose silvery hairs bespeak years of unselfish devotion, but by every brother whose face has grown benign in the performance of kindly offices, prompted by a warm heart and generous soul.

> "If more would act the play of life
> And fewer spoil it in rehearsal ;
> If Bigotry would sheathe his knife
> Till Love became more universal ;
> If custom, gray with ages grown,
> Had fewer blind men to adore it,
> And talent shown from Truth alone,
> The world would be the better for it."

The obligations of the physician do not all come from the direction of his patrons. He has a duty towards his professional brethren who are common laborers in the same great field. The work is a noble one, filled with sentiment, which should always be manifest by the spirit of fraternal unity. In all branches of business the wheels of progress are held back by feelings of envy towards a more prosperous competitor. Selfish greed and popular pride are back of this, and it stands without a redeeming feature. The medical man above all others can ill afford to encourage actions so uncharitable ; they belong to the baser qualities of human nature, and exist only where the generosity of the soul is shrivelled by the blight of pride and avarice.

Notwithstanding the advancement of science, there are those in our profession who hold to the practice of divination, much like the barbarian. They assume a supernatural endowment of power. They know every disease at sight, account for all causes producing the same, and promptly outline treatment, all without error. Strangely enough there is an excess in their *pro rata* of deaths, but that they explain readily by their claim to a more extended practice. They object to consultation, except when they know that the consulting member will not (for policy's sake) assume to suggest any modification, but heartily endorse the source of treatment, and extend warmest congratulations to the twice victimized patient in his having secured the rarest medical skill. They further desire to have it understood that they have a monopoly upon all up-to-date medical knowledge, and demand a corresponding share of the patronage of the community in which they reside. All these things bring reproach upon our beloved profession and indicate a much needed reform along certain lines.

The preceptor who teaches and the medical college which graduates should impress upon the student the fact that every worthy physician must first be a MAN,—not in stature simply, but in character. That the first principle of manhood is the thoughtful recognition of the rights of others. That when he enters upon his life-work he must appreciate the moral side of every obligation, whether it be towards a patron or a competing brother. That his worthy rivals, through their compliance with all legal requirements, have the same rights that he himself enjoys. That to build up by tearing others down is to erect an uncertain structure upon an unenduring foundation, in which jealousy is the chief corner-stone.

This reflects upon the dignity of our high calling and depreciates its true worth in the eyes of the public. Being bound by all the ties of a common cause, we should not treat a rival brother as an alien, because his services are more in demand than our own. He is not to blame, neither is the public at fault. The difficulty lies within our own doors; and if we would come up to the pace set, it behooves us to move the difficulties out of the way and put things to rights. This would be much more honorable than to find fault and seek to besmirch our competitor's good name, thereby impairing his usefulness as well as our own; for such actions appear greatly out of place, in that they contrast with the spirit of kindness and sympathy which is elicited by the character of every appeal which comes from the great field in which we labor.

The physician should be an exemplary man; progressive and systematic in business; prompt in his responses to calls and attentive to his patients; courteous and gentlemanly at all times. He is probably the greatest one of all influences which enters the homes of his patrons from without. His every word is given consideration, and every act noted for its indication. How careful then should be his deportment. Kind in his attentions, gentle in manner, clean in speech and in person. It is contrary to the spirit of every code of just laws for him to shock his patient by oaths or harsh words, or to pollute the sick-chamber with the stale fumes of tobacco which cling to clothes and breath. A still grosser violation is an attempt to attend the wants of his patient when his face is flushed and brain befogged from free indulgence in narcotics or stimulants. He should always strive to be his best. His office should be neat and clean; it is an index to the character of his work. His remedies should be carefully prescribed and of the best. He should be at least moderately supplied with medical journals of the higher order, and his library should be up to date. When possible, he should be active in a medical society and liberally inclined towards all worthy schemes for the advancement of medicine,—preventive as well as curative.

These are essentials, and when a man ceases to require them, it is only a matter of time when his stagnation will relegate him to the musty shelves of idleness and ignorance. A man cannot live wholly for himself and to himself, and keep abreast with the progress of the times.

Gentlemen, let our efforts always be made along the line of sobriety, honesty, and faithfulness. These are essentials to true advancement and success, as due regard for natural law is to health. It is not all of life to get wealth and fame. He who lives for these alone, lives for himself; and the great mission of his life is a failure. But he who lives for others, manifesting the true spirit of self-sacrifice, his words and deeds are seeds sown by his life, and will spring up and grow when he is gone. Recognizing the moral features of his obligation, he acknowledges the debt he owes a higher power, and, through faithful services tendered his fellow-man, he acknowledges the brotherhood of humanity.

"If man dealt less in stocks and bonds
And more in deeds and bonds fraternal;
If Love's work found more willing hands
To link this life to the supernal;
If more stored up love's oil and wine
And on bruised human souls would pour it;
Did yours and mine more oft combine,
The world would be the better for it."

Hygiene and Spirituality.

BY ALFRED C. HAVEN, M.D.,
Lake Forest, Ill.

WE listen to much from the pulpit as to our soul's need, and we hear much that stimulates our intellectual growth. Does the body, that divine tabernacle which invests the soul during its earthly pilgrimage, receive its share of attention? Is it not relegated to the fields of medicine and the fine arts?

Man is a complex being; man is a trinity composed of body, mind, and soul, interwoven and interdependent each upon the other. The soul is limited in its environment by the mind and body. The body is no insignificant element in this human trinity. The bilious man hates his brother, a pill transforms that hatred into love, where a theological dissertation on the wickedness of hatred would be impotent. How often irritability, peevishness, and gloominess are due to the presence of the lithates accumulating in our blood and poisoning our brains; eliminate them by diet and exercise and the evil disappears. It is said that Napoleon lost one of his famous battles by having eaten an indigestible bun; many of us have lost our tempers as the result of indigestion, greatly to our chagrin afterwards. How much easier it is for the youth to look hopefully on life; this is partly due to his superabundance of health.

How much easier for all of us to love God and our fellow-man when we are free from the pernicious effects of sickness and disease.

The mind, too, can only attain to its highest development in a sound body. God desires all to approximate to this, *Mens sana in corpore sano.*

I would not minimize man's spiritual need, for it is great, nor his intellectual wants; but it does seem to me that men forget how sacred, how holy, how pure these bodies of ours, made after the image of the living God, should be.

It is truly a sin to waste our vitality, a sin to neglect exercise and fresh air and sunshine, when they can be obtained; it is a sin to breathe foul air, a sin to acquire habits that tend to impede the highest physical development, a sin to give one's self insufficient rest, to eat and drink improperly. In fine, it is the duty of every Christian, who desires the highest development of his spiritual, mental, and physical well-being, to understand the laws of *health*, as well as the laws of intellectual development, and that admirable compendium of moral and religious action called the Decalogue.

Do clergymen as a class devote sufficient time to physical development? The tendency is all towards sedentary habits. I would that we had a more bodily vigorous ministry,—muscular Christianity is a good thing,—I am sure it would produce sermons of greater intellectuality and spirituality. I can't see why a clergyman's dignity is compromised by indulging in the proper amount of physical exercise regularly. My own pastor rides a wheel, plays golf and tennis, though near fifty, and I am sure his parishioners love him the more, and he is the gainer in every sense.

I believe the clergy should seek after physical truth as truly as spiritual, and should encourage their flock to become men in the highest sense, to conserve and strengthen and develop their souls, intellects, and their too-often-neglected bodies.

St. Paul tells us there are some things hard to understand; and from the stand-point of hygiene I confess I am puzzled to understand why the grandest of all truths, the sublimest of all knowledge, the very word of God, should be imparted to men under such unhealthful conditions. Physiologists tell us man needs 1200 cubic feet of pure air each hour. Now what church gives one-twentieth of this to its congregation? Packed in like sardines in a box, the doors closed, the windows shut, the air of the ordinarily well-attended church soon becomes thick enough to acquire a ponderability quite evident. For one and one-half hours each inhales the air exhaled by others, and each contributes his poisonous exhalations. Is it any wonder that the beautiful climaxes and the striking antitheses, and the poetic symphonies of the pastor are blurred or lost on the blunted intellects of his poisoned hearers, who have developed soporific tendencies, due to the anæsthetic influence of the prevalent carbon dioxide? If it is bad during the morning service, it is worse in the evening, for the sexton, ignorant of science, fails to let in a fresh supply of oxygen, and the air is poisoned to begin with; then the gas or lamps need air for combustion and the atmosphere becomes fouler than ever. Disease is more readily conveyed in such an atmosphere. The young are more susceptible to such surroundings than adults. Colds result more frequently from such poisoning than from exposure to extremes of temperature. Headaches, faintness, and nausea, in extreme cases, are symptoms, and often one does not regain one's composure till some minutes after reaching fresh air. Perhaps some may think this gross exaggeration, but I am sure one who looks will not have to investigate long to find such conditions as I have depicted. I admit that the evil varies greatly in degree in different localities, but it exists to some extent in nearly all. And I aver that there is not the slightest excuse for this state of things, if health were made the chief desideratum. It would seem that ventilation were a lost art; if not a lost art, it is an expensive one, and consequently neglected by building committees, who erect handsome, ornate, architectural façades and towers, beautiful to gaze upon, but with utter disregard to the healthfulness of the interior. There are several methods of ventilation in use, and the theatres and public schools of our large cities have adopted them. Should the church lag behind in this matter? Should she not seek the highest physical good of her members in every way, and thus aid them in their spiritual aspirations?

Montaigne in a single sentence expressed volumes when he said, "Our work is not to train a soul by itself alone, nor a body by itself alone, but to train a man; and in man soul and body can never be divided."

Imperfect Assimilation in Infants.

The combination of yolk of egg and olive or cotton-seed oil, made into an emulsion, is found very useful in cases of rickets or chronic malnutrition in infants. The emulsion can be made as follows: Olive oil, c.c. 60; glycerin, c.c. 30; yolk of one egg. Make an emulsion, and add one-half minim of creosote to each drachm. Occasionally it is better to use a smaller amount of creosote when this agent is not well borne by the stomach. A full teaspoonful of the emulsion is given three times a day after feeding. The preparation seems to be readily tolerated, even when the stomach is irritable.—*Practitioner.*

THE ANNALS OF HYGIENE
PUBLISHED MONTHLY
SUBSCRIPTION TWO DOLLARS
A YEAR, IN ADVANCE
Address all communications to
UNIVERSITY OF PENNSYLVANIA PRESS

EDITORIAL

All subscriptions to "THE ANNALS OF HYGIENE" are taken "until ordered discontinued," and no agent has authority to make any other arrangement. At end of time to which subscription has been paid or promised, a bill for a year in advance, with return envelope, is sent, and if journal is no longer wanted, the subscriber should mark "Discontinue" on the bill and return to us. A failure to so return bill is considered an order to continue.

COMMUNICATIONS SOLICITED.

We are always anxious to receive short communications—500 to 1000 words—on practical subjects pertaining to hygiene. To any one sending us an acceptable article, we will forward THE ANNALS OF HYGIENE for one year *free*.

Water.

WHEN we reflect that the Creator of this world made two-thirds of it water, we must conclude that He intended that water should play an important part in His designs of creation ; and when we learn that seven-tenths of the weight of the human body consists of water, we are still more impressed with its importance. There is, probably, no one single agency that causes more disease than foul water, while nothing is so conducive to the preservation of health as the liberal use of pure water.

Let us clearly understand what we mean by foul and pure. Pure water is best typified by rain-water as it leaves the clouds ; foul water is best represented by the water of a river into which all the sewage of a large city is emptied, while between these two extremes we find all degrees of purity or of foulness.

It is not always the case that water which *looks* pure and sparkling and clear really is so. Muddy, cloudy-looking water is not, necessarily, impure water, so far as the production of disease is concerned.

To those living in a state of nature wholesome water is always accessible ; it is only when individuals aggregate themselves into communities that the question of the purity of their water-supply becomes serious, because it is likely to become polluted by the refuse, or waste, from their own bodies.

The city of Philadelphia will afford a striking illustration of this point. This city derives its water-supply from the Schuylkill River. Fifty years ago it was unusually pure and wholesome water, so much so that masters of vessels, about putting to sea, considered themselves fortunate if they could fill their casks with Schuylkill water. To-day this water is very foul, and not fit for drinking purposes, because large cities have gradually grown up along the banks of this river, discharging therein their drainage or waste.

Ancient Rome teaches us a valuable lesson in water. With the river Tiber flowing through the heart of the city, the people of Rome did not drink its water; but, going miles away into the mountains, pure spring water was conveyed, in fourteen stupendous aqueducts, into the city, and this was in the days when Rome was "mistress of the world."

Those who live in cities have no choice but to drink the water that is furnished to them by the authorities; but the education of popular opinion to the importance of pure water will compel the authorities to furnish it.

The water-supplies of the two cities referred to—namely, ancient Rome and modern Philadelphia—will serve as types to illustrate what should and what should *not* be supplied to the people.

We hear a great deal of talk now about different systems for the artificial purification of foul water; while this may be necessary in some of the densely crowded portions of central Europe where, owing to the great concentration of population, it is almost impossible to find water that has not been polluted by human waste, such a condition should not confront us in this country. There is, as yet, no city in the United States within reasonable proximity to which pure water cannot be found; and it should, therefore, be the aim of the authorities not to seek for some artificial system of purification, but to look for a source of supply that will furnish a water already naturally pure and beyond the liability of contamination.

Even though water may not be contaminated by the germs of any particular disease, yet, if polluted by organic refuse, it may be the means of causing much ill health. It is related of a gentleman and his wife that for months both had suffered from dyspepsia, headaches, backaches, muscular pains, and general languor, and that health was restored upon abandoning the use of drinking water from the family well, which they supposed to be of excellent quality, but which was found, upon examination, to be badly polluted by drainage from an adjacent farm-yard.

Let us divide water into four classes,—

(1) *Rain Water.*—Under which is included all water deposited from the atmosphere, as rain, hail, snow, dew, or frost.

(2) *Surface Water.*—All collections of water in free contact with the air, as lakes and seas.

(3) *Subsoil Water.*—Water at moderate depth below the surface, not in free contact with the atmosphere, and derived, in large part, from the rain or surface water of the district.

(4) *Deep Water.*—Water accumulated at considerable depth below the surface, and from which the subsoil water of the district is excluded by impermeable strata.

Dr. Henry Leffmann, an eminent authority on the subject, concludes that while rain-water is, theoretically, the most pure, yet it is, practically, unavailable, and often unsafe.

Subsoil and surface waters offer the most agreeable and uniform source, but require careful protection and constant analytical control to prevent disease-producing action.

The most unexceptionable sources, from a hygienic point of view, are the true deep waters, representing, as they do, masses of water that have passed through an enormous distance of soil and have long since lost any contamination.

Home-Made Malt Extract.

Dr. E. C. Stowell gives a method of making home-made malt extract, free from alcohol, as follows: Three ounces or three heaping tablespoonfuls of crushed malted barley should be mixed well with half a pint of cold water; allow it to stand ten or twelve hours in the cold; decant carefully and strain through three folds of muslin; squeeze the barley grains a little through the muslin to add to the food value of the preparation. It is cheap and as efficient as the higher priced articles. It must be used soon if the weather is hot, to prevent fermentation; but if bottled and kept in a cool refrigerator it will retain its properties for some time. It is said to have the power of converting the starch in our food into a soluble form, and for those whose digestive organs cannot handle starch it may be useful.

NOTES AND COMMENTS

Diphtheria and Roup in Fowls.

The transmission of diphtheria to human beings from fowls is affirmed by Gerhardt, Debrie, Menard, Schrevens, and other writers. Cole reports a case in Jacksonville, Illinois, where a sick chicken was taken into the house and fondled by a child two and one-half years old. Four days later the child was taken with diphtheria and died. There were no other cases of the disease in the neighborhood, and the affected chicken was the only source of infection.

It is evident from the limited investigations made that diphtheria prevails among fowls to a larger extent than is supposed. Their habits of living—running at random over wide ranges, picking food from garbage and manure-piles—render them especially liable to infection. It is a common practice to bring sick chickens into the house for treatment, where children are permitted to handle them, and it is evident this disease is spread in this manner more extensively than has been supposed, and that many cases of mysterious sources of infection of children could be traced to infected poultry.—*Exchange.*

The Old World's Centenarians.

A German statistician has studied the census returns of Europe to learn a few things about the centenarians of the Old World. He has found, for instance, that high civilization does not favor the greatest length of life. The German empire, with 55,000,000 population, has but seventy-eight subjects who are more than a 100 years old. France, with fewer than 40,000,000, has 213 persons who have passed their 100th birthday. England has 146; Ireland, 578; Scotland, 46; Denmark, 2; Belgium, 5; Sweden, 10; and Norway, with 2,000,000 inhabitants, 23; Switzerland does not boast a single centenarian, but Spain, with about 18,000,000 population, has 410. The most amazing figures found by the German statistician came from that troublesome and turbulent region known as the Balkan Peninsula. Servia has 575 persons who are more than a 100 years old; Roumania, 1084, and

Bulgaria, 3883. In other words, Bulgaria has a centenarian to every thousand inhabitants, and thus holds the international record for old inhabitants. In 1892 alone there died in Bulgaria 350 persons of more than 100. In the Balkan Peninsula, moreover, a person is not regarded on the verge of the grave the moment he becomes a centenarian. For instance, in Servia, there were in 1890 some 290 persons between 106 and 115 years, 123 between 115 and 125, and 18 between 125 and 135. Three were between 135 and 140. Who is the oldest person in the world? The German statistician does not credit the recent story about a Russian 160 years old. Russia has no census, he says, and except in cases of special official investigation the figures of ages in Russia must be mistrusted. The oldest man in the world is then, in his opinion, Bruno Cotrim, a negro born in Africa and now a resident in Rio Janeiro. Cotrim is 150 years old. Next to him probably comes a retired Moscow cabman, named Kustrim, who is in his 140th year. The statistician says the oldest woman in the world is 130 years old, but neglects to give her name or address, probably out of courtesy, or perhaps, in view of the extraordinary figures which came to his hand from the Balkans, he thought a subject only 130 years old was hardly worthy of particular mention.—*Medical Review.*

Danger in Public Baths.

How many diseases can be caught and are, in fact, being taken in badly-kept and imperfectly-cleaned tubs, through the use of sheets, towels, combs, brushes, etc., which are not only disinfected, but which are not even kept in respectable condition.

Four well-proven cases, which it would have been impossible to have brought to light in a large centre of population, came under my personal observation in Orizaba, a city of thirty thousand inhabitants, in which I practised several years.

One was that of a healthy and robust child, without a taint of hereditary disease, to whom a scratch in the leg had brought a hard chancre, which developed by a succession of accidents into constitutional syphilis. An individual I was treating for chancre had just made use of the same bath-tub.

I have seen two young men who had taken scarlet fever in a bath that had just been left by an individual recovering from this disease, and who was then losing his skin; and, lastly, I have seen a wound in the face, nearly cicatrized, develop into erysipelas, putting the patient's life in great danger, who took that sickness in a bath which some hours before had been occupied by a man who was convalescing from erysipelas in the leg.

These few cases, or examples, casually investigated, make us contemplate seriously, to how many risks we are exposed in baths under the conditions in which they are at present conducted.

Indeed, in many of them cleanliness is much to be desired, but even in those which are most recommended, through the careful attention they receive and cleanliness observed, how many germs of infection or parasites can be waiting for their future victim, concealed in the folds of the whitest bed-sheet, or towel, or in the depths of, apparently, the most pure and transparent water ?—*Journal American Public Health Association.*

Child Study.

When now we consider that from a fifth to a fourth of all the pupils in our public schools are suffering from defective hearing ; when we consider again the acknowledged stultifying effect of this misfortune upon the intellectual, business, and community life of each, as well as upon his capacity for enjoyment, and then, when we further consider that our best physicians assert that with proper care on the part of the parents and teachers this number would be reduced to 2 per cent., it requires no very great strength of the imagination to compel the belief that vastly more practical good would redound to humanity by careful systematized examination and treatment of these defectives, than by so much religious devotion to the abstract, mechanical "drills" of our fathers.

From the beneficial results of the eye and ear studies above described, as everywhere apparent, it was deemed vital to carry the work farther and to pursue it more systematically. Accordingly, blanks based upon the one suggested by Dr. Krohn in the December number of the *Child-Study Monthly* were provided for permanent record of each individual pupil, the essential requirements of which are date, grade, school, name, age, sex, nationality, post-office address, birthplace, birthplace of father and mother, past and present health, causes of death of father and mother, vision, hearing, visual comparison and visual and auditory memory. The pupils are taken aside singly or in small groups, the various tests applied, and the facts ascertained carefully recorded. These records are then made a part of the official report of each pupil, the same as the standard items of attendance, tardiness, estimate of work accomplished, etc. While it will probably take years to realize the full salutary effect of this system, yet a sufficient amount has already been accomplished unhesitatingly to warrent the statement that in its influence upon the present and future status of both pupil and teacher it is intensely practical.—*Kindergarten Magazine.*

Fish.

For the sedentary man, whatever his calling in life, whose engagements permit him only to take just that moderate amount of muscular exercise which is in all circumstances essential to health ; for a great proportion of women whose habits mostly are not, and often cannot be, active, the nutritive elements afforded by fish admirably supply an important part of the wants of the body. The moderate amount of flesh-forming material present in fish, and in a form which entails little labor on the digestive organs (for most persons certainly eat less than meat), and the facility with which fish may be associated with other elements (some fatty matters, with cereals and vegetables, as well as fruits) place it in the first rank of foods in that mixed dietary which is suitable to those who lead more or less the kind of life referred to. I by no means say that it should supersede the use of meat altogether, although it may do so sometimes with advantage,—a point only to be determined in each individual instance after some observation and experiment. For in all cases it is to be remembered that no man who has habitually eaten meat two or three times daily can at once exchange it for fish and cereals or vegetables without some discomfort, to say the least. All radical changes in diet, even in the right direction, require to be gradually made ; the stomach conforms slowly, when long accustomed to deal with highly nitrogenized animal food, to the task of deriving from unaccustomed materials the support necessary to the body. Given time for such modification of function, and it is remarkable—at least it appears so to those who have not practically studied the subject—that a diet which, if adopted suddenly might be equivalent to semi-starvation, may by degrees become the most healthful and nutritious which the individual can adopt.—*Sir Henry Thompson, in Food and Feeding.*

Longevity and Labor.

An English report mentions thirty-three persons upward of one hundred years of age alive in Great Britain in the year 1893. The oldest was a woman, one hundred and sixteen years old, if the claim was correct, though such cases are usually to be taken with some discount. One of the most striking facts regarding these centenarians is that their lives were those of simplicity and industry.

It is not useful work, but anxiety which kills men. Overwork of the stomach, liver, or kidneys is vastly more damaging to a man than overwork of the brain or muscles, since, so long as the stomach is intact, overworked muscles may be easily repaired; and so long as the liver and kidneys retain their integrity, the effects of excessive brain work are easily removed by the elimination of the resulting poisons from the body. Many die from overwork, but it is overwork at the dinner-table rather than in the field, workshop, or counting-room. Hard labor is healthful. The majority of men, and women also for that matter, are suffering, not from overwork, but from too light work. More work is required. It may be more mental activity or more muscular exercise. Evil results from work flow not from excessive work, but from a lack of proper distribution of work, so that every organ and every faculty receives its own share and not one organ an excess and another a deficiency.—*Journal of Hygiene.*

Preserving Meats by Electricity.

The principle of cataphoresis, or the driving of foreign substances into animal tissue by means of electric currents, has been adopted with great success in both medical and dental work. In these capacities it is employed principally in conjunction with cocaine or some other anæsthetic for the purpose of rendering the flesh or the tooth to be operated upon insensible to pain. The benumbing solution is forced into the tissue, and even into the obdurate sensitive dentine of the tooth, until no sensation whatever is possible for the time-being in the region under treatment. A provision merchant of Rio Janeiro has suggested an application of this method to the preservation of meat. He immerses the meat to be preserved in a 30-per-cent. solution of common salt, and passes through the whole a continuous current of electricity. In from ten to twelve hours the salting is said to be complete, and the meat is taken out of the bath and hung up to dry. Good results were obtained in working a bath of 3000 litres of lime, in which 1000 kilos of meat were immersed; a current of 100 ampères at an electro-motive force of eight volts was used in this bath. The electrodes must be of platinum, since, if other materials, such as zinc or iron, were used, the metal salts formed would be injurious.—*Boston Journal of Commerce.*

Need for Sleep.

By far the most important compensation for all effects of fatigue is sleep. Everybody, even the man mentally most inert, develops when awake a mass of mental effort which he cannot afford continuously without suffering. We need, therefore, regularly recurring periods in which the consumption of mental force shall be slower than the continuous replacement. The lower the degree to which the activity of the brain sinks, then, the more rapid and more complete the recovery.

The mental vigor of most men is usually maintained at a certain height for the longest time in the forenoon. Evidences of fatigue come on later at this time of day than in the evening, when the store of force in our brain has been already considerably drawn upon by the whole day's work. If no recovery by sleep is enjoyed, or it is imperfect, the consequences will invariably make themselves evident the next day in a depression of mental vigor, as well as in a rise in the personal susceptibility to fatigue. The rapidity with which one of the persons I experimented upon could perform his task in addition sank about a third after a night's journey by railway with insufficient sleep. Another experimenter could detect the effects of keeping himself awake at night in a gradual decrease of vigor lasting through four days. This observation was all the more surprising because the subject was not conscious of the long duration of the disturbance, and was first made aware of it incidentally by the results of continued measurements on the causes of the manifestations of fatigue.—*Popular Science Monthly.*

The Meccan Pilgrimage.

The Indian government has ordered that no residents of Bombay Presidency or Sindh, and no person who has entered Bombay Presidency or Sindh, with the object of proceeding on a pilgrimage to the Hedjaz, shall be allowed to embark from any port in British India for the purpose of making a pilgrimage to Mecca. All pilgrims who have entered these presidencies are to be placed in a camp of observation until the medical officer in charge has decided that there is no further risk of plague breaking out among them, and then sent to their homes. Local governments are directed to segregate, for at least seven days, all persons who intend making the pilgrimage; and when the commissioner of police at Calcutta signifies that a ship is ready to sail, each batch of pilgrims is to be sent in a special train direct to Diamond Harbor, there to embark at once. Thus, although the pilgrimage is forbidden from the plague-stricken districts, it is not peremptorily prohibited from all parts of India, although the government is doing all in its power to induce the Mussulman community to forego the pilgrimage altogether. The French government has forbidden the pilgrimage from Algeria and Tunis, and the Sultan of Morocco has forbidden pilgrims to leave that country for Mecca.

How to avoid taking Cold.

The *fin de siècle* toilet is not complete without rinsing the mouth and spraying the nasal passages and the throat with an antiseptic solution night and morning. By these means the upper air-passages are kept in an antiseptic condition, unfavorable to the development of germs, and disease is prevented. G. Lemoine, in the *Nord Médecin* of February 15, states that numbers of persons by these simple precautions have passed through the winter and rainy spring without once catching cold, although they had previously been extremely sensitive, and troubled with severe colds much of the time. He recommends to rinse the mouth with a glassful of 50 grammes Labarraque's solution mixed with 1 litre of water, or the following: Thymol, 0.50 gramme; alcohol, 20 grammes; water, 1 litre. With an ordinary toilet atomizer the nasal passages and upper part of the throat should be thoroughly sprayed with some solution like the following: Phenol-salyl, 0.50 gramme; chloride of sodium, 3 grammes; distilled boiled water, 500 grammes. He adds that the teeth should be well brushed, and the fingers never put in the mouth or nose. A few menthol drops should be carried in the pocket and dissolved in the mouth occasionally. He concludes with the remark that a friend of his has always succeeded in breaking up a cold in an early stage by taking during the first day four to six capsules or pills of essence of turpentine in addition to the rinsing or gargling and spray, with a glass of purgative water the next day, followed in a few hours by a 0.50 centigramme of quinine.

Domestic Sanitation.

In this age of rapid improvement in the arts and sciences, and of beneficial reforms in social and political life, it behooves physicians to contribute a share of time and talents in the promotion of the healthfulness of the community in which they reside, writes Dr. A. O. Stimpson, of Thompson, Pa., to the *Medical and Surgical Reporter*. In their travels among patients, they often see many existing evils that could be easily corrected were the attention of the public specifically directed to them.

In most farming communities there seems to prevail a careless indifference to anything that might tend to bettering their sanitary surroundings and a stubborn determination to ignore ways and means of important sanitary reforms. On some farms we find not only the stables and out-houses built in close proximity to the family dwelling, but overrunning with all manner of filthy accumulations. If a calf, sheep, or any other animal happens to die from accident or disease, the owner of such stock, after some hours' deliberation, takes his stone-boat, hitches his horse or oxen to it, and, after transferring the carcass of the dead animal to said vehicle, drags it to a convenient distance from the house and there dumps it upon the ground. Here it is allowed to remain openly exposed to the air until it is converted into adipocere or until the crows constitute themselves scavengers *pro tem.* and devour it. How much better would it have been if the farmer had heaped a pile of straw and fagots on the dead animal, applied a torch, and cremated it. But, no ! that would have been too much trouble. It was so much better to allow the foul effluvia from it to contaminate the atmosphere for miles around. Sanitary laws should be enacted making it compulsory to cremate all refuse animal matter.

Allowing decaying vegetables to remain *ad infinitum* in dark and damp cellars is another source from which many diseases may generate. The immediate removal of such matters and a generous sprinkling of chloride of lime over the cellar floor would quickly remedy the difficulty and remove the cause of threatened infection. As an additional support to my theory of disinfection, I would suggest the liberal sprinkling of chloride of lime in privy vaults, on stable floors, and over the cellar bottoms once a month during the summer season, and twice or three times through the winter season.

A Proposed Treatment for Consumptives.

The "quintessence of common sense" is what we must call the following suggestions of Dr. H. T. Tillotson, which we find in the *Journal of the American Medical Association*, April 3.

Form a party of four to eight individuals under the supervision of a physician, employ a cook and drivers, purchase all necessary paraphernalia, and leave the towns to lead a nomadic life under canvas, with diversions of hunting and fishing, sure to relieve the mind of morbid occupations, supplying sufficient compulsory exercise to stimulate a wholesome appetite and a rapid improvement in all symptoms, in all reasonable cases. The expenses of such a trip of four or five months will be no more than ordinary Western hotel charges, and much less than expenses at some sanitariums and resorts. Much more could be said on this subject of a practical nature.

The dangers of aggregations caused me to adopt the camping plan in recovery in four or five months. I prolonged my out-door life, through choice, for over two years. I rented a common farm-wagon and team, and made an extensive trip in Western New Mexico, sleeping on the ground at night, preparing my own meals, hunting and fishing when opportunity presented, obtaining constant occupation driving, care of horses, and other necessary duties. My next trip was also in a wagon across Southern Chihuahua and Durango, Mexico, where our hardships were sometimes pronounced. The following winter was partly spent in the saddle near the summit of the Sierra Madra Mountains. The summer of 1894 was devoted to the saddle and wagon, in Northern California. The following spring and summer occurred my last wagon trip, from West Port, on the Pacific coast, across California, Nevada, Idaho, the Yellowstone National Park, to Cinnabar, Montana. By this plan I was enabled to move my sanitarium daily; every night found me on sterilized ground, never infected or host to tubercle bacilli, a plan compelling me to seek health instead of waiting for her to seek me. I enjoyed to the fullest extent nature's panorama, revealed in daily sections, and the pleasurable excitement of plentiful hunting and fishing, sound sleep, and a ravenous appetite. The almost perpetual sunshine, dry air, high altitude, unavoidable exercise, and exhilaration were the components of the prescription, causing my own recovery promptly, permitting my subsequent residence in Chicago in the best of health.

This is a prescription eagerly and rapidly assimilated, greatly desired by the healthy, and positively curative in others.

To Sterilize Milk.

To sterilize milk, Malcolm Morris directs thus: Place the milk in a clear bottle, and plug the mouth with clear cotton-wool. Then stand the bottle in a suitable metal vessel so that it is raised about half an inch from the bottom; pour cold water into the outer vessel until it attains the level of the milk, and heat slowly on a stove until the temperature of the water reaches boiling point. Now take the vessel from the fire, and cover over loosely with a piece of woollen cloth for half an hour, at the expiration of which remove the bottle, and store it in a cool place.—*Public Opinion.*

Emasculated Foods.

In these days of sophistication and competition it can be said, without fear of contradiction, that more ill-health is caused by the use of indigestible and emasculated food than by any other one cause.

By emasculated food we mean food that has been deprived of its nutritious properties in the effort to make it pleasing to the eye or grateful to the palate.

The public have no conception of the extent to which this emasculating process is being carried.

Nature furnishes nourishment for man and man defeats the aims of nature by calling chemistry to his aid that he may adorn the work of nature, in doing which he robs it of its value. It is not always with intention that this is done; very often the fact is not realized that the chemical manipulation designed to make a food more pleasing and salable, has, at the same time, removed from it its nutritive properties; but the fact remains a fact, and to this fact experience leads us to attribute much of the physical degeneracy so characteristic of our times.

Without nutritious food one cannot have health and vigor; this is a self-evident proposition. Emasculated food must produce emasculated individuals. With fresh animal food sophistication is not so easy; it is with the cereals mainly that emasculation is so common. Oat-meal is universally conceded to be the most nourishing of all the cereals, and no other cereal is so frequently emasculated in its preparation for the consumer.

Look out for it that those who look to you for guidance do not use emasculated foods.

The New Health-Meter.

If we would qualify ourselves for a shrewd guess as to what abnormal or pathological tendencies a given patient is likely to develop—in other words, in what direction lies his line of least resistance to the inroads of disease—let us, says ingenious Dr. Odiardi, take the patient while he is well, and bring him into a temporary pathological condition by subjecting him to quick fatigue, and carefully note results. This fatigue is most quickly and harmlessly induced through the respiratory apparatus. The patient is requested, by strong respiratory efforts, to maintain the mercury as long as possible at a given height in the column of a manometer. Five minutes of such exertion suffice, we are told, to bring about a general fatigue in which the pathological tendencies individual to the patient show themselves readily to trained observation. Thus before the experiment begins the patient's temperature is carefully noted; the color of his face, the frequency and fulness of his pulse, the heart-sounds, the number of respiratory movements, the relation of inspiration to expiration, etc. These things are again noted at the experiment's conclusion. The results are said to be most surprising in their variations. Thus in some subjects the pulse falls, in others rises; the same is true of the temperature; in some pulse and temperature rise or fall together; in others, one falls or rises, the other remaining stationary, and so on, through innumerable variations. According to these variations Dr. Odiardi pursues his system of "classification by predisposition," warning his patients what to avoid, what regimen to pursue, and so on. London is said to have taken up this "health-meter" notion with much enthusiasm, and to have one's physical fortune told, if one may put it so, is among the reigning fads of the medical hour. How far the "health-meter" can be put to practical scientific use is still, however, to be demonstrated.—*Popular Science News.*

Climate for Asthma.

In conclusion, I will add a few words in a general way as to the selection of a climate for asthmatics (says Dr. Frederick I. Knight in the *Boston Medical and Surgical Journal*, March 25). As I have already said, the influence of climate is often very subtile, yet if we proceed on the same lines as I have suggested for medical treatment, of considering what factors we may influence by change of climate, we may yet often guide a patient successfully. Can we remove him from some direct irritant, as in the hay-fever cases? Shall we find a climate which will fortify or calm a hyperæsthetic nervous system? Or shall we (which is perhaps oftenest required) put him in a climate which will act favorably on his bronchial inflammation? If we wish to do the latter, a dry, elevated region is indicated if the bronchitis is moist, but a warm, moist climate will probably be better if the bronchial mucous membrane is dry and irritable. As in all other means of treatment the nearer we get to an exact diagnosis of the exciting and underlying causes of asthma, the more intelligently and successfully will we be able to advise in regard to change of climate.

Bread and Health.

There is no one thing so important in the family as bread. Bread and butter form a staple food in every household, yet the aim of the miller is to make a flour that shall be perfectly white, no matter how much of the good part of the wheat is eliminated in the process. Comparatively few of the housekeepers of the land know how much has been sacrificed of the most nutritious portions of the wheat kernel to prepare for their consumption a white flour. It would be as sensible to soak a piece of porterhouse steak in hot water to get rid of the color and make it white as to take the mineral salts and phosphates out of the wheat kernel for the sake of making a white flour. The sooner parents find this out, and the more they use of whole wheat flour, the better for the growing children, who need all the nourishment they can get from their food to knit their young bones together. The whole wheat flour is a trifle more expensive at the beginning than the white flour, but the amount of nourishment secured for every dollar expended is largely in excess of that to be had in white flour.—*Exchange.*

Leprosy's Spread in Hawaii.

In a letter to Dr. Ashmead, of this city, Dr. Mouritz, of Molokai, says that that place is one of the best fields for observing the penalty the human race is paying for its apathy in dealing with leprosy. The lepers at Molokai number between 11,000 and 12,000, chiefly natives; but within a year or two the disease has begun to make inroads upon the white population. The law of segregation was for a long time very loosely enforced, and, although the condition is better to-day, isolation is still far from thorough and effectual. The increase in the number of lepers in Columbia has been, Dr. Ashmead writes, from 400 to 27,000, not to 2700, as was incorrectly stated in his letter published in these columns on January 23.—*Medical Record.*

The Gooding Burial Plan.

One of the latest phases of the sanitary burial question is found in what is known as Gooding's scheme, whereof a patented coffin forms the chief characteristic. The Sanitary Burial Association, Limited, of London, has been formed to promulgate Mr. Gooding's views in a practical fashion. Mr. Gooding's plan of burial consists of a coffin essentially resembling that of the undertaker, but containing a concealed layer on the top, bottom, and sides. This layer, some two or three inches thick, is composed of "a chemical preparation," which, it is alleged, absorbs all moisture emanating from the body, and prevents the formation of dangerous gases after death. The body is thus said to be desiccated or dried up, "and in course of time silently and inoffensively becomes assimilated by the earth in which it is buried, without the intrusion of lower animal life." In Mr. Gooding's system the mummification of the body is regarded as the essential feature; and whether that process will destroy disease-germs or not remains to be seen. But as it is stated that the coffins may be made of papier-mache or wicker-work, one begins to see that Mr. Gooding's scheme, if properly carried out, should resolve itself, first into a plan of employing perishable coffins; secondly, of using his chemical preparation for the rendering of the body innocuous; and, thirdly, of burial in a suitable soil which would favor early resolution of the body into its elements.—*London News.*

A Strange Burial Vault.

One of the curiosities of Bremen, Germany, is the Bleikeller (lead cellar or vault), often passed by the hurrying tourist. Aside from its historical interest, being located in the old cathedral built on the site of Charlemagne's wooden church, erected in the twelfth century, the cellar is famous scientifically for having the property of preserving dead bodies, human and animal, from decomposition. Many theories have been advanced by doctors and scientists as to the cause of this mummifying process, but no satisfactory explanation has been given, other than that the moist atmosphere in the cellar is impregnated with a lead salt which prevents decomposition of fleshy matter, as long as the body is kept in the even temperature and chemically charged atmosphere of this peculiar tomb.

The corpses deposited there for several centuries have all the appearances of an Egyptian mummy, being better preserved, without the wrinkled appearance of flesh on face and body as seen on a corpse from the pyramids. Another curious fact is that chickens, crows, dogs, and rabbits are well preserved in like manner when left hanging in the embalming atmosphere of this remarkable Old World refrigerator cellar.

New Cure for Bruises.

Instead of having recourse to applications of tincture of arnica, spirits of camphor, and to strong compression of the swelling, in the treatment of light bruises, Dr. Auger prefers the use of olive oil, both in children and in adults. He applies the oil freely to the contused parts, and rubs the latter lightly with a rag, absorbent cotton, or with the fingers, and covers the bruise with a compress saturated with olive oil. The author claims that this treatment gives immediate relief to the patient, and that the formation of a bloody protuberance is often prevented; while excoriations and superficial wounds, which may be present, heal very rapidly.

The Scientific Aspects of the Recent Glove Fight.

That distinguished exponent of the manly art of self-defence, Mr. Robert Fitzsimmons, would hardly feel complimented were he to read the remarks of the *Medical Press and Circular* upon the character of the blow by which he recently won the heavy-weight championship. "The deciding buffet," says our contemporary, "was evidently one administered over the celiac plexus, called a blow on the heart, really on the stomach. The referee described it as 'an underarm punch,' just below, and slightly to the right of the heart, which is, being interpreted, the pit of the stomach. By the laws of the ring, the blow is a fair one. By the rules of common humanity, however, it is a cowardly outrage little short of a deliberate attempt at assassination. The fatal nature of a severe blow to net-work of visceral nerves known as the celiac plexus, makes such 'punches' as those which finished Corbett among the most deadly that can be inflicted with the fist. By the way, what have the antivivisectionists to say to this brutality inflicted by man upon man?"—*Boston Medical and Surgical Journal.*

Sudden Blanching of the Hair.

The *Progrès Médical* for February 13 alludes to the case of a man who was the director of a pottery during the Franco-Prussian war. The Prussians swarmed into the pottery and seemed about to carry away everything. He pleaded with them, in order to save as much as possible, complaining bitterly because they had taken their horses into the warehouses filled with crockery and china. Twice they pressed him to the wall, and twice a Prussian officer, having received a Masonic sign from him, intervened and saved him. During the following night his hair turned completely white.

National Diet.

Ancient Egypt, during her period of highest civilization, subsisted almost exclusively upon millet, dates, and other fruits and cereals. Athletic Greece rose to her greatest culture upon two meals a day, consisting principally of maize and vegetables steeped in oil. A nation's decline almost invariably begins with gormandizing. When exciting wines and a host of rich and stimulating viands become necessary, a country bids "a long farewell to all her greatness."—*Metaphysical Magazine.*

The Sweet Pea vs. Flies.

A writer in the *Medical Record* is responsible for the statement that the odor emanating from the flower of the sweet pea is so offensive to flies that it will drive them out of the sick-room, though it is not usually in the slightest degree disagreeable to the patient. It is therefore recommended that sweet peas be placed in quantities in the sick-room during fly-time.

Danger in Infants' Foods.

In Amesbury, Mass., a few weeks ago, a child died under circumstances which, it is claimed, indicated poison from an article furnished by a local druggist. It is not contended that there was any mistake in putting up the prescription, but that the prepared food it called for had been kept until it was so old that it was totally unfit for use and poisonous.—*New England Druggist.*

An Active Old Man.

The Dublin correspondent of the *Lancet* writes that at an athletic contest, held recently at Fremont, County Cork, a man named James Loder, aged 82 years, covered thirty-three feet in three standing jumps. Several young men failed to come within three feet of this distance. Old Loder weighs only 112 pounds, and is remarkably vigorous. It is asserted his father lived at the age of 110 years.

For Freckles.

℞	Potass. carbonat.	ʒiii
	Sodii chlor.	ʒii
	Aq. aurant. flor.	℥ii
	Aq. rosæ, ad	℥viii. M.

Sig.—Use night and morning.—BARTHOLOW.

THE ANNALS OF HYGIENE
PHILADELPHIA
VOL. XII NO. 6

COMMUNICATIONS.

Precaution in Diseases.

BY ELMER E. BEAMS,
German Valley, N. J.

HOW many of our schools are frequently disturbed by the outbreak of a contagious disease? It is a disturbing factor both in regard to health and education. A contagious disease breaking out in a school is sure to spread over the entire school district and neighborhood, unless due vigilance is put forth by teachers, school officers, and township boards of health.

Prevention is far better than cure. From a first *view-point*, hygiene is a preventive science, and therefore the first question that presents itself is, *how to prevent* the occurrence of contagious diseases common to children. With this end in view, *first* of all, give all buildings and surroundings a close examination as regards cleanliness, ventilation, and other care included in good sanitary arrangements and house-keeping.

Second, we must give very close attention to the individual child. Coming, as they do, from so many homes of different grades and localities, and of parents of various habits, there is the utmost need of special knowledge as to the cleanliness of each child, and the teachers on this point should not forget themselves. Pay close attention to the hands and hair. Foul mouths, uncleaned teeth, and a foul breath are often a prime cause for much disease breaking out in a school.

A short talk of five or ten minutes at the opening term of school, and at other times when the occasion may demand it, on "mouth-cleansing and a sweet breath" is highly in order and an imperative duty. The same can be said of spittle. Diphtheria and other sore-throat troubles are, in a large measure, communicated by dried particles of spittle. Such is also true of most eruptive diseases and to whooping-cough. School-children should not be allowed to spit upon the floor, not only from a sense of decency but from a hygienic *view-point*. Finger-nails uncleaned often carry fruitful germs of contagious diseases.

A notice of some form should be sent to each parent before the opening of school each year by the clerk of the Board of Education, that children are not to be sent at the opening of the school from homes in which there is a communicable disease, except with the consent of the attending physician, and that they are to be kept at home in any outbreak of disease unless the physician regards their attendance as safe. Disease is spread more broadly by the mild cases than by those confined to a sick-room.

Where no physician is in attendance the teacher should be consulted in reference to the matter. From some homes children could be returned sooner than from others, especially from those homes where cleanliness is practised. When there is any communicable disease in any school district the teacher should be quietly watchful as to the physical condition of his pupils, and send those home from school at once who show any signs of illness. We know it is a delicate and very difficult matter to take proper precaution and yet avoid inquiry and anxiety, which so often disarranges a school or closes its doors for a season. But this judgment and tact is acquired by experience guided by knowledge. Increasing watchfulness is absolutely necessary.

But supposing that, after all our careful precautions, a contagious disease has broken out, we are confronted with the more serious question ; prompt action is absolutely necessary in reference to life and health. Different cases and different diseases will require different modes of procedure.

If a contagious disease breaks out in your school, have the ill one, or ones, taken home as soon as possible and by such a route as not to expose others on the way. At once notify the parents of the nature of the disease and caution them about exposing others to the same. Notify the adjacent families, so that the children are kept apart as much as possible.

Avoid panic and excitement. Very much depends upon *what* the disease may be. If it is the *measles*, avoid exposing others, but don't discontinue the school.

Treat whooping-cough and mumps in the same manner. If you should be so unfortunate as to have a case of *small-pox* break out, attend to a general vaccination at once. In the case of *scarlet fever*, I think we should be guided largely by the advice of a skilful physician, as there are many types of this disease. Avoid exposure as much as possible and give the matter immediate attention.

In diphtheria we must act in a careful manner, and not give our decision too hastily. We can connect the contagion of many other diseases with the patient's breath, the shedding of the epidermis, but the cause of *diphtheria* is not easily defined, and ofttimes seems obscure and to cling to certain localities.

We find many cases of so-called diphtheria are nothing more than *follicular tonsillitis*, or some other minor form of throat-disease, but when a distinct case of genuine diphtheria has been made out, careful separation will very often prevent spread. But if there is no indication of spread, I think it best to adjourn school, for at least two weeks anywise. The community will be in a stage of extreme excitement and the school very poorly attended. During this temporary close, you can have a thorough house-cleaning and give the premises a most radical disinfection.

Where a case of *diphtheria* or *scarlet fever* has been brought to a school, there is little doubt that others will follow, so house-cleaning may be gone into at once.

Diseases of the eye should receive careful attention. If they secrete pus, they are very often contagious and should be looked after by a physician. Isolation will act as a safety-valve until all danger is passed by. Many skin-diseases are very contagious and should be treated as hinted above.

Wherever there is prompt notification of all contagious diseases, and prompt attention given thereto by teachers, physicians, and boards of health to the *first* cases of disease in their incipient stages, many contagious diseases are prevented from spreading and no necessity for disruptive methods.

Teachers should make this subject a careful study, as upon them lies great responsibility in this direction. The following table, taken from the one furnished by Dr. Whittelegge, may prove of some value to teachers and others interested :

TABLE.

Name of Disease.	Quarantine to be required after Last Exposure to Infection.	Earliest Date of Return to School after an Attack.
Small-pox	18 days.	When all scabs have fallen off.
Chicken-pox	18 "	When all scabs have fallen off.
Scarlet fever	14 "	Six weeks, and then only if no desquamation or sore throat.
Diphtheria	12 "	Three weeks, if convalescence is complete, and no sore throat, albuminuria, or discharges remain.
Measles	16 "	Three weeks, if all desquamation and cough have ceased.
Whooping-cough . .	21 "	Six weeks from the commencement of the whooping. If the characteristic spasmodic cough and whooping have ceased. Earlier if all cough be gone.
Mumps	24 "	Four weeks, if all swelling has subsided.

The Erect Posture.

BY GEORGIA MERRIMAN, M.D.,

Superintendent of Hygiene and Heredity, Fifth District of Ohio W. C. T. U.,
Bucyrus, Ohio.

THE complete demoralization of the spinal column so quickly ensues upon man's refusal to maintain the perpendicular that it is not surprising to see so many vertebrates possessing only rudimentary or curved backbones. An all-wise Creator made them in separate pieces to give suppleness and agility to the biped called man; but he with his many inventions has sought remedial measures without number for spinal curvature, and somehow seems to have overlooked, or at least failed to prevent, these slight deviations from the straitlacedness of our grandmothers. Daughters of the Revolution, where are the baskets of fruit or flowers ye colonial dames carried on their heads to give them their proverbial poise and grace of carriage? Queen Natalie, of Servia, practises some portion of every day carrying a heavy pitcher on her head. Why should not every school-girl carry her books to and from school in that way, and thus secure at the same time her education and her health ; for, in my opinion, none of the internal organs can preserve their original outlines and continue their normal functions if either chest-wall or abdomen be dragged sideways to accommodate itself to curved spinal column. If this curvature was from posterior to anterior, we might attribute some of the manifest tendency to inherited proclivities ; but the lateral ligaments of the spine connecting each vertebra with its upper and lower neighbor are the ones which are held responsible for this deformity.

The Indian squaw, with only instinct as her guide, straps her pappoose upon a board for facilitating her own locomotion, and thus insures a straight man to the world, while fond mammas from fashion's rank coolly lift a week-old baby without support to its undeveloped spinal processes, and probably lay the seed in fertile soil for future crooked-backed human creatures. Is this ignorance or culpable cruelty ? The first three months of a child's life should be spent in obscurity and serenity. A strong light or a loud disagreeable noise should be carefully guarded against. Without thought or instruction baby naturally gets low crowing and enjoys it. As soon as a child has learned that difficult feat of maintaining its own equilibrium it should be pleasantly taught to carry something on its head ; to do this requires every vertebra from neck to coccyx to be exactly over the other ; no other calisthenic exercise requires so strict an adherence to the centre of gravitation. Another most efficient method of developing strength in spinal column is frequent bathing and massage of the posterior and lateral muscles. Moral delinquencies have been attributed to lack of backbone ; may it not be from lack of proper exercise of this hygienic axiom to keep erect and carry heavy burdens. The failure in mammas and nurses to properly develop the spine and the tight-lacing of maidens places healthful living and natural childbearing out of the question. How can an anteriorly curved spine, a compressed abdomen, and reduced respiratory space accommodate itself to the conditions of maternity. When will woman lose this fearfully foreshortened perspective and live her own life and think her own thoughts whether her neighbor approves or does likewise ? Mothers, think for yourselves and act for your children. Dress yourself warm, and your girls as well as boys should wear woollen garments next the skin, as cotton goods always conduct heat from the body and wool is a non-conductor of animal heat, and clothing should always conserve and reserve the heat of the body. The conservation of nature's forces is a hygienic axiom.

Hygiene of Childhood: Exercise.[1]

BY JOHN SPECHT, M.D.,
Superior, Wis.

CHILDHOOD is much neglected in its physical development at the present time, and as we progress more and more in our civilization, and, like the gregarious creatures that we are, when we congregate more and more in the centres of population, the cities, where sweatshop and factory, where crowded tenements and offices, where poorly ventilated stores and crowded schools, and where all the many bad environments of the growing child are most conspicuous, it is not a wonder, with all these surroundings and conditions to contend with, that childhood should grow up as it does. It is a sad picture, and it is not astonishing that the child thus brought up should be an easy prey to consumption and other infectious diseases; and if the child lives to grow up to manhood, it is not a man with a robust constitution and vigorous health, but a species of man called in common parlance "the dude," with all his mental and physical frailties. Most children can withstand the evil effects of close confinement and life in-doors for a short time, or even years, without any visible injury, but if continued long enough there comes a certain degree of impairment in the constitution which offers a ready soil for the reception of diseases, and they are carried off in the early years of life victims to the many bad features of our modern civilization,—for the civilization of to-day is far different from the civilization of fifty years ago. Look at the many inventions of to-day, more and more of machinery and factories, and you will find a vast population, including many children, who labor and spend their lives in-doors. It is not only the lack of out-door exercise, but, when you come to add to this other evils, matters are made many times worse. For example, in treating a number of attendants at the high school my attention was called some time ago to the reprehensible system they have in the city of Superior. In the city high school they have but one session during the day, commencing at 8.30 o'clock in the morning and continuing until 2 o'clock in the afternoon. They have an intermission of twenty minutes at noon to give the children an opportunity to eat the cold lunches they have brought with them, and the children—who can blame them?—tell me that instead of taking the whole twenty minutes in which to eat their cold lunches, take but a few minutes to bolt a few mouthfuls of some pastry or sweetmeats, that they have the remainder of the twenty minutes for play. I was not surprised when I found many of them suffering from indigestion and anæmia; and when the principal of one of the schools consulted me for a disordered stomach, I asked him if the session could not be abridged so that they could all go home and get at the proper time what was most needed,—a warm meal. The principal thought the session could be altered so they could do so, but I see they still continue to carry their cold lunches, and disordered stomachs when they might have healthy stomachs and healthy digestion.

---

[1] From Pædiatrics.

Physical development and mental development go hand in hand; you cannot have a vigorous mind without a vigorous body. In our public schools the physical development and education of our children should be attended to as well or even better than the mental. Our leading colleges and universities recognize this more and more, and why should not our public schools be just as wisely conducted? There should be in connection with the public schools in every city or town of any importance a gymnasium, where boys and girls, under a director, will get once or twice a week at least a variety of interesting exercise; for exercise, like study, to be of benefit must be made interesting and attractive. In a properly constructed gymnasium, with the various appliances for exercising all the different muscles, under the guidance of a proper director, our schools would turn out such an athletic set of young women and men as would make us proud of their physical symmetry and health as well as their mental capacity and education. The people all over this land are arousing themselves and taking more and more interest in this subject, but let us as physicians kindle the faint interest now burning into a bright flame of enthusiasm that will soon establish one of the greatest necessities of our public schools,—the gymnasium. The people as yet have not the right idea of what our schools should be when they train one great organ, the brain, at the expense of weakening all the other organs of the body. Our schools should be an institution in which all the organs and muscles of the body should be equally developed and trained, and, in case there is any defect of mind or of muscle, that weak part must be more especially trained and developed. The system of education would then be adapted to each individual according to his needs, instead of the one system for all which now prevails. The athletic Sandow says the training and exercise of a child should be commenced as soon as it is able to walk, by carrying and using articles that are very gradually increased in weight. This is true. We cannot commence too early to look after the proper muscular exercises of our children. Many parents are too busy to look after either the mental or muscular development of their children, and are getting into the habit of leaving it all to the public schools. The schools look after the mental development well enough, probably a little too well, but the muscular, alas ! it is almost completely ignored. What is exercise ? If we look into the dictionary we find that exercise is the exertion or action of the body for the sake of keeping its organs and functions in a healthy state,—hygienic activity. If that is exercise, why do we not heed the necessity for it more than we do ? See the manifold benefits of exercise : it conduces to health, happiness, longevity, prevention of diseases, and the cure of diseases and deformities. Can I pay a better tribute to exercise than to name these peculiar qualities of our existence and as they are influenced by exercise. Health and happiness,—what is the world without health and happiness ? Physicians know, and we also know, that if we build up a good constitution by exercise while we are young, it will stand by us and carry us through long years of artificial and sedentary life, thereby promoting longevity. In the prevention of disease, exercise plays an important part. We are made up of many microscopic cells ; the energy of each cell is represented by the energy of the body as a whole. You can now plainly see that the energy of each cell depends upon exercise, and when a child comes in contact with the poisonous germs of infectious diseases there ensues a battle of life and death, the vital energy of the cell on the one side, and the infectiousness of the bacterium on the other. If the cell is victorious, the bacterium is destroyed before it has had time to injure the child. If the cell is conquered, there is no further obstruction to the proliferation and spread of the bacterium of the body. You have all, no doubt, read Metchnikoff's description in Ziemssen's article of the fight of our little life-cells against the various bacteria. I wish to bring it before you again. He says, "The function of resistance inheres in the so-called glutton cells or phagocytes, which are recruited from leucocytes and fixed connective-tissue cells. They appear upon the battle-field with the irritation induced by the invasion of the bacilli ; they proceed at once to devour the invaders,—that is, they receive them into their parenchyma and digest them or make them incapable of proliferation. The phagocytes are divided into two groups, the large and small (macrophagi and microphagi). The former include the epithelioidal cells of the connective tissues, etc., the other the lobulated nucleated leucocytes. Both forms, according to Metchnikoff, play different parts in different infectious diseases. According to the latest publication, the streptococci of erysipelas, for example, are swallowed by microphagi, these in turn are ingested by the parenchyma of the macrophagi and digested. Gonococci are eaten by microphagi, while the bacilli of anthrax in rabbits and guinea-pigs are only ingested by macrophagi. In the bacilli of tuberculosis both forms of phagocytes take part in resisting the invasion.

"So you see that the immigration of bacilli into a perfectly healthy child is checked at once and made innocuous ; but in a predisposed child, with their life-cells weak, and lacking energy, the virulence of the bacilli, while not entirely destroyed, is rendered innocent of harm for the time being by encapsulation in the fixed connective-tissue cells ; but when they enter weak organs in large numbers, they overcome all opposition and soon destroy the child." To this little story I add a moral, and the moral might read, Keep your life-cells active and strong by exercise. In regard to the cure of diseases and deformities I will not go into detail, as this would make a book of many pages.

We all know of many diseases of a chronic nature that have been cured by exercise, and we likewise know of many deformities cured by exercise, especially in childhood, when such deformities are most easily corrected.

The Relation of Noises to the Public Health.[1]

BY WILLIAM C. KRAUSS, M.D.,

Professor of Nervous Diseases, Medical Department of Niagara University,
Buffalo, N. Y.

THE American people, as has been often asserted, are a patient and long-suffering nation, but when once thoroughly aroused to the magnitude of their grievances, are quick in meting out justice to their oppressors.

The residents of our cities have become accustomed to many inconveniences not experienced in rural communities, and have borne them patiently as an offset to the many advantages which they do enjoy. Such annoyances, or, better, nuisances, as the overcrowded and dark tenement, smoke, dirt, and noise, have grown so amazingly in many cities during the past few years as to call for more than personal complaint to regulate them, and are attracting the attention of municipal authorities with a view of dealing with them from a judicial stand-point. Of all such nuisances that of noise seems to be the most difficult to abolish or mitigate, because of its omnipresence and close relationship with the affairs of every-day life. Many such noises, however, could be easily suppressed and others decidedly moderated if proper attention were called to their uselessness as well as harmfulness, and if the authorities took the necessary steps looking towards their suppression. A certain amount of agitation and discussion is always necessary before such regulations are decided upon and enforced, and even before the community is aware of the fact that such noises are unnecessary and liable to regulation by municipal ordinances.

The only references[2] that the writer has been able to find on this subject are contained in editorials in the *Medical Record* of June 13, 1896, and in the *Maryland Medical Journal* of June 20, 1896, both taking their text from articles published in the New York daily papers of recent date.

---

[1] Read at the twenty-fourth annual meeting of the American Public Health Association, Buffalo, N. Y., September 18, 1896.

[2] Since writing the above an article has appeared in the September number of the North American Review, by Dr. J. H. Girdner, on The Plague of City Noises; also an editorial in the Cincinnati Lancet-Clinic, July 18, 1896.

It seems to me a propitious occasion, at this meeting of the American Public Health Association, to call attention to this growing nuisance, and to ask this powerful body of scientific men to start the crusade against one of the most annoying and harassing drawbacks to comfort and good health in all our American cities.

That it is a question affecting the public health, and, therefore, within the scope of this association to consider, the writer believes can be clearly shown, and although not a believer in the possibility of exterminating all noises, still a step in the direction named would decidedly moderate and, perhaps, abate some of the most annoying.

Sounds are impressions produced on the ear by vibrations of the surrounding elastic media, as air or water. Such sounds resolve themselves into two great classes : first, musical notes, and second, noises.

The musical sound is produced by sonorous shocks, taps, or puffs, which follow each other at regular intervals with a sufficient rapidity of succession. A noise, on the other hand, is produced by an irregular and confused succession of sonorous shocks. While a musical sound flows smoothly without asperity or irregularity, the noise is jerky and produces jolting and jarring of the auditory nerve. A musical sound produces a feeling of pleasure and a regret when it ceases ; a noise, on the contrary, is attended with a sensation of irritation and a feeling of relief when it is terminated.

Noises are produced by a manifold variety of agents ranging all the way from the Chinese rattle to the thunderous discharge of atmospheric electricity.

To attempt a classification of the various noises and their provocative agents is a task not easily accomplished, and I trust you will bear with me in my rather hazardous undertaking. Noises may be divided into two great classes, those of nature or natural noises, and those of man or artificial noises.

The natural noises stand in close relation with the elements, and may attain a degree of severity and terror surpassing all description. They emanate from sources over which man has but very little control and but slight power to check or to curtail them. They need, therefore, but passing notice and no consideration as regards their treatment. As such we have—

- *Noise.*
  - Natural.
  - Artificial.

- *Natural.*
  - Thunder.
  - Storm.
  - Water.
  - Fire.
  - Catastrophe.

- *Artificial noises.*
  - Necessary.
    - Warning.
    - Traffic.
    - Manufacture.
  - Unnecessary.
    - Summons.
    - Municipal.
  - Traditional.
    - Street venders.
    - Celebrations.
    - Commotions.
    - Applause.
    - Small boy.

(1) The deep, loud, rumbling sounds heard after a flash of lightning, caused by the discharge of atmospheric electricity, and known as thunder.

(2) The loud, roaring, often tempestuous sounds, due to more or less violent disturbances of the atmosphere, usually producing wind-, rain-, hail-, or snow-storms. Sometimes they develop into cyclonic storms, passing from the warmer zones in a northeasterly direction and culminate at storm-centres, producing such roaring and violent sounds as once heard will never be forgotten.

(3) The somewhat musical and rhythmic sounds produced by the rushing, roaring, and falling of waters. These sounds are more or less pleasing at the sea-shore and at waterfalls, but become terrifying and awe-inspiring in times of flood and tidal waves.

(4) The crackling, snapping, and explosive sounds attendant upon conflagrations.

(5) Somewhat akin, though not properly included in this category, may be mentioned the various noises attendant upon catastrophes. As such may be mentioned earthquakes, volcanic eruptions, snow-slides, floods, for which man is in no way responsible, and under the second head the collapse of buildings, bridges, and other structures, collisions, caving in of mines and embankments, land-slides, and other accidental and distressing occurrences, for which man is in some measure responsible. These are usually attended with some loss of life, and are, there-

fore, mingled with the groans and cries of the dying and wounded, making them the most dreaded and terrible of all the various noises.

The artificial noises may be divided into (1) the necessary, (2) the unnecessary, and (3) the traditional noises.

The necessary noises may be subdivided into (1) those of warning, (2) traffic, (3) manufacture.

Warning—The noises of warning are manifested in various forms of bells, gongs, whistles, horns, sirens, and the like. They are a necessary evil to every street-car, locomotive, fire apparatus, patrol-wagon, ambulance, and their use is being extended to bicycles, trolley-repair-wagons, and in some cities to physician's carriages. The fog-horns and sirens on shore and on board are equally necessary, and until some other device is invented are indispensable to the safety and protection of many.

These noises all have for a common purpose the prevention of danger to mankind, either individually or collectively, and having a purpose should not be misused or disregarded, but carefully exercised and practised to the least extent commensurate with the public safety.

Traffic.—The noises of traffic are necessary only in so far as when they are reduced to a minimum. Their maximum development does not indicate the size or prosperity of the community, as some writers would like to infer, but a carelessness and perhaps indifference on the part of those either directly or indirectly concerned. The rumbling of cars, steam or electric, over poorly-built road-beds, the rumbling of loosely-geared vehicles over roads and defective pavements, the puffing and prolonged whistling of locomotives, the rounding of curves by street-cars are productive of extra noises which could be easily, if forcibly, moderated. In this city the noises arising from traffic over pavements is considerably reduced because of the wide extent of asphalt paving. Nevertheless, we are behind some of our neighboring cities in the adoption of the rubber-tired carriage-wheel, which in great measure reduces this form of noise to a minimum. These wheels are manufactured on a large scale in a near-by city, and their use should be encouraged by all who patronize this form of locomotion. The preference of the asphalted streets over the cobble-stone pavements has encouraged vegetation on the latter, and on many of our streets in the Elmwood district the grass is growing as luxuriantly as in some of the deserted villages of the far West.

The incessant clatter of the gongs on street-cars in the crowded business streets can be very easily avoided by the stationing of policemen at street-crossings, as is done in this city, thus insuring safety to pedestrians, avoidance of collisions, and the non-necessity of the gong. The avoidance of the business streets by the fire department, ambulances, bicycles, and unnecessary vehicles of all description should be insisted upon as far as possible, and would relieve the congested business district of much noise, danger, and confusion.

The value of real estate on some of our residence streets is seriously affected by the noise of the heavy trolley-cars running over badly-repaired tracks and switches and around curves which are not kept properly oiled. The noise of a passing trolley-car drowns conversation for the time being and makes veranda life in summer unpleasant and exasperating. Residents of the outlying districts try to secure homes near trolley lines, but try harder to get on streets not having the car service, their excuse being, partly if not wholly, to "avoid the noise, din, and confusion of the discordant trolley." Much of this noise can be obliterated by keeping the tracks in good repair, the trucks and journals of the cars well oiled and tightened, and the speed limited in crossing streets, thus calling for less activity of the gong. All necessary noises will then be more cheerfully tolerated and the trolley-line streets less discriminated against by home-seekers.

The prolonged whistling of locomotives on approaching stations is unnecessary on roads having the block system, and the indiscriminate whistling and tooting of the locomotives in the yards and the steamers in the harbor might also be moderated, if not altogether silenced.

Manufacture.—The noises of the factories, mills, shops, and forges, especially in the manufacture of metallic wares, are least liable to moderation, and must be patiently borne by those residing in their immediate neighborhood. Such factories should not be allowed upon closely-settled residence streets, and the windows looking upon the streets should not be permitted to remain open. The plan adopted by Pittsburg, perhaps for commercial purposes merely, of having the rolling-mills, forges, and blast-furnaces along the river banks or in the outlying suburbs, as at Homestead, Braddock, and Duquesne, is an excellent one, and is more or less followed by the larger factories in this city.

The Unnecessary Noises.—Summons.—Such noises as the untimely ringing of church-bells and the blowing of time-whistles in the early morning hours are no longer necessary in these days of universal time-pieces. In former years, when the time of day was watched by but few fortunate individuals, these noises were a necessity, but in recent years they have given rise to much complaint, and in this city a few have become silenced through the efforts of those who were annoyed and disturbed by them. The ringing of fire-alarm bells is a source of much disturbance in many cities, and where a telegraph alarm system exists should be suppressed not only for the benefit of the citizens but firemen as well.

Municipal Noises.—The noisy, rattling, iron trucks, used to convey garbage-barrels from backyards to the street curb, constitute a source of much complaint, especially when such barrels are removed early in the morning ; likewise the heavy and loosely-geared street-sweepers and dumping-wagons as they move along the block pavements. Many other municipal noises could be mentioned which cause vexation and discomfort to those in the immediate neighborhood, especially in the early morning or evening hours.

The Traditional Noises.—By traditional noises I have designated those which are directly produced by individuals, many of which have become engrafted upon American city life. They are a nuisance, if not a plague, and should certainly be curtailed if not altogether forbidden. Chiefly among these, and enjoying, to a certain extent, police protection, are the cries of the street venders, as the newsboys, bootblacks, hucksters, "old clo. men," ragmen, the corner fakir, and, substituting a bell for the mouth, the scissor-grinder, advertising wagons, and the like.

The "street arabs" of our large cities are a noisy and turbulent lot at the best, but when given license prove themselves a positive nuisance. The habit of crying out gruesome and sensational headings found in their papers by the newsboys should not for a moment be tolerated, and the congregating of these urchins about the street-corners, all crying out in unison, should also be prohibited. In many European cities such noises are not allowed, and it is doubtful whether the sale of the newspapers is injured by their suppression. Particularly provoking in this city is the noisy lot of newsboys set loose every Sunday afternoon with the New York Sunday papers, penetrating all parts of the city and crying out so lustily that they can be heard several blocks distant.

Celebrations.—The patriotism of the American youth is measured by his ability to make noise on the day of our national independence, and it seems on this day that youth still retains its grasp on the majority of our citizens. The newspapers throughout our land chronicle a long list of accidents on the day following,—some the result of personal carelessness, some the outcome of runaways caused by the exploding fire-crackers. Although patriotic and loyal to our country, still some other way might be found to celebrate this glorious holiday without the noise, explosions, fires, and consequent accidents.

Political and other celebrations call forth much less demonstration, but the rule still holds good, "the more noise, the merrier."

Commotions.—The cries and noises of mobs, street brawls, and night-hawks are recognized by our police authorities as unlawful, and offenders are punished sometimes for breaking the peace.

Applause.—The clapping of hands, stamping of feet, use of canes and umbrellas in public places, to express a feeling of gratification or sometimes one of impatience, is as universal, no doubt, as man himself. The writer recalls the disapproval which the stamping of feet always caused one of his professors at college and the expulsion from the class of all those implicated. It is, no doubt, a noisy and offensive custom and distasteful in other ways besides the noise which it creates.

Lastly, we meet the small boy with a thousand and one different ways of making a noise. His ability in this direction seems to be a criterion of his leadership among his comrades, and to rob him of these vested rights, even if we could, would make him less American and also less a boy. There seems to be no remedy but to avoid him, no recourse but his power of endurance, and he bids fair to remain lord of all he surveys.

Sounds which at times partake of the qualities of noise are those produced by domestic animals and birds. Especially annoying is it to be awakened at daybreak by the crowing of cocks, or during the midnight hours by the barking and crying of dogs or the concerted endeavors of several cats in the backyards. During the day pet parrots and other caged birds add their mite, sometimes their mightiest, to make life serious, and it is a question whether the crowded city is the proper domicile for many of these so-called pets.

We now turn to the second part of the paper and see what effect these varied noises, arising from widely different sources and of various degrees of pitch and intensity, have upon the public health.

The physiology of hearing is briefly as follows: The sound-waves are collected by the pavilion of the ear and conveyed to the tympanum by means of the external auditory canal. The tympanum vibrates in unison or in harmony with its fundamental tone, and these vibrations are carried along the ossicles to the labyrinth, where they are received by the organ of Corti. The impressions are conducted to the end filaments of the auditory nerve, thence along this nerve to the auditory centre in the brain, located in the second temporal convolution. Here these impressions are collected, differentiated and interpreted, and the conclusions despatched to the various nerve-centres for action. It is generally believed that the tympanum vibrates in resonance with sound-waves by influence, through the action of the small muscles in the middle ear. It is also undoubtedly thrown into vibrations by irregular waves of noise, and these latter demand more complex or irregular action than when the sounds are simple or melodious. The nerve filaments to these muscles acting upon the ossicles are extremely sensitive. Here, then, is one of the points of irritation produced by noises. The other is at the auditory centre in the brain, where the complex impressions are to be interpreted. Single sounds call for little activity of the brain-centres for their appreciation, but continuous complex noises demand a close application of these centres in differentiating the necessary from the unnecessary sounds, or in the interpretation of certain familiar or expected sounds among a lot of adventitious ones. The sensitiveness of the auditory centre is well illustrated by the fact that hearing is the last of the special senses to be influenced by hypnotism, also in the administration of anæsthetics; furthermore, that hearing is one of the first, if not the first, to recover after anæsthesia, likewise in awakening from hypnotic sleep.

The dangers arising from noises are therefore twofold. First, at the tympanum, where a certain amount of hyperæmia and hypertrophy are liable to result, sometimes even rupture of the tympanum, producing partial or total deafness, and, secondly, at the auditory centre, where fatigue is apt to follow the incessant activity and irritation of these centres, and a general brain tire or brain exhaustion is liable to result. Whether or not noises are liable to produce inflammatory changes in the auditory nerve, the writer is unable to say.

The effects of noises upon the general system are varied, and in the short time remaining I will attempt only to enumerate the most important.

Noise is conceded to be a great disturber of personal comfort, and the hotel chosen as your head-quarters was selected, as stated in the official journal, because it is situated "in the quiet, residential portion of Buffalo, . . . and is free from *noise*, dust, and smoke."

Comfort is that state of ease and rest so necessary to body or mind, and is pre-eminently one of the requisites of good health. Comfort and ease stand in the same relation as their antipathies, discomfort and disease, and if the absence of noise encourages the former, the presence of noise must stimulate the latter.

Noises have a tendency to unnerve an individual, especially when he is engaged upon some work calling for tact, coolness, and good judgment. I know of no better illustration of this fact than the means usually resorted to by the roosters in our national game of base-ball. At a critical moment in the game all the noise, cat-calls, and groans that can be produced are hurled at the pitcher, with the intention of rattling or unnerving him, and as a consequence he pitches wildly, batsmen are given bases on balls and the game is sometimes won thereby.

Strange noises sometimes produce a feeling of fear or inward excitement, accompanied with palpitation and feelings of distress. Whenever possible, professional men obliged to have their offices in the business district of the city, choose some side street free from traffic, or select quarters in the upper stories of our modern office buildings.

Perfect health demands a certain amount of quiet and repose, not alone at night, during sleeping hours, but during waking hours as well. The active working brain is just as much in need of rest as are the muscles of the different portions of the body, and, perhaps, the most potent factor in accomplishing this need is to secure freedom from noise. The brain, as a whole, cannot be in perfect repose when certain centres are in a state of action or irritation. The association fibres, connecting all the various centres and parts of the brain, convey the irritation from one centre to another and soon the whole brain is in sympathy with the disturbed and agitated centre.

Sleep is one of the most important adjuncts to perfect health, and, as has been so wisely said, is "tired nature's sweet restorer." During slumber the restorative and constructive processes of the system are most actively engaged, and their interference by disturbed and broken sleep is sure to react detrimentally to the general system. The effects of rest and fatigue upon the ganglion-cells of the brain and cord have been very carefully studied by C. F. Hodge, whose experiments are most interesting and instructive :

"The ganglion-cells, the active constituent of the nervous system, are situated in the gray cortex of the cerebrum and cerebellum, gray cornua of the myelon, and in the spinal and peripheral ganglia. In the myelon they lie within the periganglionic lymph-spaces, which vary in size according as the cells are in a state of rest or fatigue. When fatigued the protoplasm of the cells is shrunken and contracted and the lymph-spaces are consequently larger and more conspicuous. As soon as the cells regain their normal rest and vigor they resume their usual size and the lymph-spaces become correspondingly smaller. The nuclei of these cells behave in exactly the same manner, becoming larger or smaller according to the physical condition of the cells."

In other words, "after prolonged rest the nerve-cells are, so to speak, *charged;* they are full and ready for labor, but after a hard day's work, or after disturbed rest, they are *discharged*, shrunken and exhausted." (Gage.)

It is difficult to say just how many hours of sleep are necessary for each individual, but on the whole an average of eight hours should be the lowest limit. The various city noises are quite apt to cut this figure down perceptibly, especially in the early morning hours.

The long-continued loss of rest and sleep is in the majority of cases followed by that *bête noir* nervousness or nervous prostration, or, as physicians delight to call it, neurasthenia. Especially is this true of those individuals possessing an inherited neurotic tendency. I need not tell you what this all means, only to say that about the first advice given to the patient is to seek a quiet and peaceful spot either in the country, sea-shore, or mountain-side.

The effects of noises upon the organ of hearing itself have been referred to, and as an example the boilermaker's ear may be mentioned. Partial deafness is the rule among these mechanics, and their only hope is to secure other employment not attended with so much noise.

The effects of noises upon the sick are well known, and hospitals are usually found away from the noisy districts of the city, or if the growth of the city has crept close to the hospitals the latter are protected by asphalt pavements, courts, and by other means. Noises have a baneful influence over the sick, retarding convalescence, producing at times elevation of the temperature, exciting the nervous system, and in some cases even bringing on convulsions. It is especially upon the nervous system that the consequences are most pronounced, and in such affections as tetanus, meningitis, and encephalitis, the evil effects are most readily seen.

The covering of the pavement in front of houses containing sickness with tan-bark is a common custom and only serves to prove some of the facts presented in this paper.

These, then, are some of the most important effects of noises upon the public health, and yet up to within a very short time ago no voice was raised, no pen was stirred in protest against their usurious tendencies. The American people, fast as they are, yet in matters of public health move too slowly, and allow great odds to accumulate against them before they take the initiative.

The only remedy that I can suggest to abate many of these noises is to file protests, and have your fellow-sufferers do likewise, to the city health officer, and if he be the proper person in the proper place some measure of relief will be obtained.

Hygiene of Nursing and Food of Children.[1]

C. F. DOUGHERTY, M.D.,

Muscoda, Wis.

THE hygiene of nursing and food of childhood is a branch of our profession which should receive more attention than it does. To begin with, the best nourishment for the new-born is the mother's milk, unless there be conditions that will not admit a mother to nurse her child,—viz., from abscess of the mamma, carcinoma, tuberculosis, etc. Whether the mother will have sufficient milk and of proper quality should be determined previous to or immediately after birth of child. Generally a pregnant woman from which much colostrum flows will be the best able to nurse her child. On the other hand, where there is so little flow of colostrum that it is impossible to squeeze a few drops from the gland, this colostrum microscopically contains very few milk globules and a small number of colostrum corpuscles, and in such cases we may expect a small amount of non-nutritious milk. We cannot safely judge from general appearances, as we often find a woman with firm prominent breasts, robust and seemingly healthy, and yet the milk will be scant and non-nutritious ; and, again, we have a woman anæmic, with small breasts, and yet she will have an abundance of milk and of a proper quality.

---

[1] From the Journal of Practical Medicine.

Now, after finding a mother with proper quantity and quality of milk, the next step should be the care of mother and child. As regards the nursery-room, it should be kept dark for the first ten days, and then it may be lightened gradually and well ventilated, as fresh air is undoubtedly necessary for a robust development.

Children born in summer should be taken out daily after the first ten days ; and those born in winter, after a lapse of eight or ten weeks, should be carried out at noon-day for a short time. The child should be bathed daily in water at a temperature of 90° F. till the first incisors are cut, and then the temperature may be reduced. I would not use cold baths in first year of childhood.

The eyes of the new-born should be looked after immediately after birth ; they should be washed thoroughly with a solution made of warm water, four ounces ; boracic acid, one-half drachm. I think we cannot be too careful about this, as I think four-fifths of infantile conjunctivitis come from carelessness in this respect. Great care should be taken in handling the child for the first few months, not to keep it in an upright position.

In regard to the mother : she should be cleanly and temperate in all habits, natural or acquired. She should take a proper amount of sleep, exercise, and nourishment ; as when we have a fretful mother we may expect a fretful child. The mother should also keep her bowels regular and avoid all eatables and medicines that have a griping tendency. If the bowels are constipated, overcome that by dieting or some simple laxative. She should not become excited or overheated. She should also have a regular time for nursing the child, say, every three hours, and at no time allow it to take too much. Because a child frets, it is not (as too many mothers think) hungry. It may be the clothing is too tight, or perhaps a wet diaper.

In case the mother is not in condition to nurse her own child, and cannot afford to employ a wet-nurse, I have found that scalded milk from a healthy, well-kept cow—or better, from a herd of cows—comes next to the mother's milk. I prefer scalded milk to sterilized milk, as no special apparatus is needed for scalding, but is rendered simple enough for any housewife. Again, where the milk would not agree, I have had good results from using Nestle's and Mellin's food, either alone or with milk. I find the prepared foods agree better with children six months of age or older. As to the nursing-bottle, I find—and I think the majority will agree with me—that the common six-ounce bottle, with rubber nipple, is the best, and it is still better to have two bottles and two nipples: and while one is in use the other can be thoroughly cleaned. In summer I also find it very good to add a small amount of lime-water to the milk.

After the appearance of the first incisors the child may be given a little gravy or broth, salted to suit the taste. Salt and sugar should be given early, as the former is very essential. As the child grows older the food may be increased; also a variety given, such as juices of meats, vegetable albumen and ripe fruits, if there be no diarrhœa. Anæmic children who require additional fats may be given cod-liver oil or olive oil, as I find in my practice small doses of either given one-half hour after nourishment has been found to work very well.

The next inquiry may be the amount a child can take, and the intervals of feeding. The child's appetite should be studied for indications demanding an increase of food. It is also important that a child be taught to eat properly by giving it that which is best for it, and give it nothing else. Do not forget to give it a drink of water occasionally. When the time comes for weaning the child, which should be from eight months to a year, great care should be taken not to change from milk to solid food too abruptly. The establishment of the salivary secretions and cutting of the teeth mark the time when solid foods should be added to its diet, such as tender meats, soft-boiled eggs, and bread and butter. From this time on a child may with prudence be given nearly any of the digestible foods. Never at any time should a child be allowed to overload its stomach, for a child with an over-gorged stomach cannot sleep, and sleep plays an important part in nutrition. A poorly nourished child cannot assimilate its food.

Fresh air and sunshine, first, last, and always, for healthy, robust children.

Effects of Cigarette Smoke upon Children and Youth.[1]

BY SELENA SEVERSON, M.D.,

Madison, Wis.

THE subject is an old one, one that has long since been laid aside for others more recent and interesting, yet, if we observe that the habit of cigarette smoking is constantly increasing among boys, it should demand our attention to-day.

What is there about tobacco smoke so injurious to the young? Analyzing the smoke from tobacco, it is found to contain water in the form of vapor, free carbon in minute particles, ammonia compounds in a state of vapor, carbonic oxide, and nicotine, a complex substance, which, when analyzed, is found to contain a fluid alkaloid,—nicotine proper, a volatile substance containing ammonia, and a bitter resinous extract. Numerous other substances are often produced, but those mentioned are always present, and to them can be traced the evil effects of smoking. These are more readily taken into the lungs when smoking cigars and cigarettes than when a pipe is used; as the stem of a pipe, if porous and clean, absorbs the nicotine.

Dr. Richardson says that when tobacco is used, the blood becomes thinner and, in extreme cases, paler. Examined microscopically the red blood-corpuscles are found fewer in number and to lie widely separated, the tendency to form into rouleaux being lost. The form is changed from the double concave and smooth border to an oval form with a crenated border indicating a change in the density of the plasma. The ammonias have the effect of dissolving the blood-corpuscles; the absorption of the blood of the various poisons inhaled when smoking lessens the oxygen-carrying power, hence oxidation of the tissues is partially arrested and their disintegration retarded. The poisonous products are quickly eliminated through the lungs, kidneys, and skin, and one day of abstinence from the use of tobacco is sufficient to restore the blood to its normal condition.

---

[1] From Pædiatrics.

The influence upon the heart is that of a functional derangement producing irregularity of action, due to the poisonous effect of nicotine upon the nerves controlling its action. The symptoms are those of palpitation, dyspnœa, and sometimes pain.

Upon the nervous system the poison, nicotine, has a decided effect. It paralyzes the nerves controlling the muscles of the iris, and consequently the pupil becomes widely dilated. The symptoms produced are obscurity of vision, specks before the eyes, and sometimes deep-seated pain. Upon the exhausted brain it has a soothing effect; upon the fully-nourished brain it acts as an irritant. In extreme cases the most pronounced effect is that upon the cord, both the sensory and the motor nerves of which may be affected, as shown in external insensibility, convulsions and paralysis. Death results from respiratory failure due to spasm of the chest muscles, or from paralysis of the heart.

Through the sympathetic nervous system the secretions are disturbed, also the regulation of involuntary muscular contraction, as shown by the muscular spasm of the stomach and by the vomiting produced on the first attempt at smoking. The nerves controlling the secretions of the glands are affected in such a way as to cause over-secretion, and, if tobacco is excessively used, secretions may become uncontrollable. In the majority of smokers the salivary glands are excited to over-secretion, and if the saliva is swallowed it conveys to the stomach the poisons, nicotine and the bitter extract. These irritate the mucous membrane and cause inflammation. Irregular secretion of the gastric juice follows, and often a deficient amount is produced, causing dyspepsia and loss of appetite.

The muscular contraction of the stomach and intestines is increased. In moderate smokers this acts as an aperient; but if smoking is carried to an excess the muscles may become paralyzed and constipation results. These disturbances being functional, the tissues quickly regain their normal condition when tobacco is not used.

Although the salivary secretion is increased, the mucous membrane of the tongue and throat becomes dry and irritable, due to the ammonia inhaled. The gums may become firm and contracted, or vascular and sore with a tendency to bleed. In the smoker's sore throat the mucous membrane is inflamed, the tonsils enlarged and soft, causing pain on swallowing.

Free carbon is deposited upon the teeth, discoloring them; but acting, it is thought, as an antiseptic and preservative. Inhaled into the lungs it acts as a mechanical irritant to the mucous membrane of the bronchial tubes, and if bronchitis be present it maintains an irritable state of the membrane and keeps up the cough. It cannot be said to cause directly any organic disease of the lungs; but the absorption by the blood of the various poisons inhaled causes a general enfeeblement of the system,—the carbonic acid and oxide causing incomplete oxidation of the blood, the nicotine producing various nervous phenomena, and the ammonia compounds having a solvent power upon the blood-corpuscles. Thus, by lessening the bodily vigor the person is unable to withstand disease, and if he inherits weak lungs, may easily become a prey to the tubercular bacilli.

In conclusion, I would say that upon the young tobacco has a decidedly injurious effect. If, as I have tried to show, tobacco produces functional disturbances of the principal organs of the body, the heart, the stomach, lungs, etc., and that the system is constantly striving to eliminate the poisons, then surely so much energy is wasted through all the years when so much is needed for growth and repair. With the blood incompletely oxidized, heart acting feebly, stomach refusing to digest properly, lungs, skin, and kidneys overworked, the whole organism is in a state of disorder. What is the result? Dr. Richardson says, "Impairment of growth, premature manhood, and physical degradation."

By all means prohibit the young from smoking. Already several States have passed laws prohibiting the manufacture and sale of cigarettes to minors. Anti-cigarette leagues are formed among the boys in some of our large cities with very encouraging results. Let the good work go on.

The Home of the Beautiful; or, the Care of the Body.[1]

BY REV. J. B. KENYON,

Syracuse, N. Y.

IT is very likely that if we could know all the facts in the case,—the padding resorted to, the intense style and thought given to fabric, and the astonishing number of garments worn,—in some instances the body would seem to be much less than the raiment upon it. I have sometimes thought that a modern interpretation of the scriptural declaration that "man is fearfully and woman dreadfully made" would have respect to his attire. The monarchs of the nineteenth century are the tailor, the milliner, and the modiste.

The body is worthy of proper and tasteful garmenting, for it is a palace more wonderful than ever Aladdin entered of old. In its house the sovereign soul, the immortal and heaven-descended occupant whose years are of eternity itself. How shall this marvellous structure of clay be rendered neat for its royal occupant? Undoubtedly the answer must be, "By rigidly conserving all the laws of health."

There are two important reasons why sound health is needful to us all :

(1) For our greatest efficiency in the work of life. I am well aware that there have been instances of glorious genius flourishing in a feeble body. To be in harmony with the universe which God has made we ought to appear as well as we can. We cannot all be beautiful as regards star-bright eyes and a symmetrically proportioned physique. But good health is in itself a kind of beauty, and the rosy cheeks, the clear complexion, and the vigorous frame attest the abounding vitality from which they spring.

(2) Again, sound health is needful for our highest happiness. Our appreciation of life and the blessing which we are enabled to extract from it will depend upon our mental condition. But the account of the mind is largely to be sought in the body. Correct thinking depends upon physical health and that depends upon

---

[1] Extract from a Recent Sermon. From the Sanitarian.

correct living. Morality and even religion begin with the very food we eat. Let us briefly consider some of the requisites of physical well being :

(*a*) Pure air. Sometimes a prayer for a good meeting is not answered because it is unable to get beyond the foul air of the room in which it is offered.

(*b*) Pure water for ablutions and the quenching of thirst. John Wesley declared that "cleanliness is next to godliness." I would amend the utterance by saying that "cleanliness (both physical and moral) is godliness." There is a single word in Chinese which means at once, a towel, a comb, and a woman.

(*c*) Let in the light. Sunshine is a distroyer of microbes.

(*d*) Do not fret. Money is a source of indigestion. "Care killed a cat."

(*e*) Dwell much with nature. So did Jesus, who withdrew again and again into the solitary place. But beauty of person is, even in the beautiful, occasional only. Let your mind be beautiful, and it will shine through and illuminate the grosser clay. If by love and nobleness we take up unto ourselves the beauty we admire, we shall spend it again on all around us.

Finally, let this mind be in you which was also in Jesus Christ.

Hot-House Children.[1]

WE remember reading somewhere some years ago, in a non-professional publication of some sort,—we would gladly give credit for it if we could recall the name, although the tale was not even then new,—the story of a little boy who had been brought up in a most hygienic manner by a scientifically-minded mother. The nurse's breast (the mother was an invalid and could not nurse her child, hence her solicitude that Hygeia should watch over her son's bringing up) was always carefully washed in boiled water before the child was put to it, and later no raw food, not even raw milk, was allowed to pass the boy's lips. His meals were carefully regulated and were always at the same hour, and by no earthly chance did he ever get hold of any bread and butter and jam between times. He grew along for several years, being fairly well, but suffering now and then from digestive disturbances, much to his anxious mother's mystification. When he was about twelve years old he went on a visit to his grandmother, who had a lot of wretched old-fashioned notions about boys and their stomachs. In her ignorance of hygiene and alimentary asepsis she fed the child on pies and doughnuts and other such poisonous confections, and he died within a week of his return home. This is the story in substance, though it was told with greater detail and much more interestingly. We, of course, do not vouch for its correctness; indeed, we have no idea that it ever happened just as related. But although the product of a layman's or laywoman's imagination, it contains the suggestion of a truth which we are in some danger of forgetting. Coddling is often, if not always, pernicious. We cannot avoid danger by running away from it. Some day we must face it, and if then we are unprepared by having met and overcome smaller risks we must inevitably succumb. A child brought up in a hot-house will perish in his first snow-storm, and a stomach which has never had any harder task than to dispose of peptonized milk will collapse in a railway eating-house.

---

[1] From Pædiatrics.

A Portable Vacuum-Chamber for House Disinfection by Formaldehyde.[1]

BY WYATT JOHNSTON, M.D.,

Montreal,

Bacteriologist to the Board of Health of the Province of Quebec.

I WISH to record an experiment in the construction of a vacuum disinfecting chamber recently authorized by the Board of Health of the Province of Quebec. It was designed to be sufficiently light and compact to be carried on a stretcher upstairs and through ordinary doors by a couple of men, and at the same time large enough to contain at one charge as many infected articles, difficult to penetrate, as are likely to be met with in routine disinfection of an ordinary sick-room. The object was to secure complete disinfection without the removal of the effects, and also to economize the formaldehyde.

The principle established by Kinyoun that the use of a partial vacuum insures more complete disinfection and minimizes the amount of formaldehyde has been confirmed by the experience of others, and appears to rest on a good scientific basis.

---

[1] From the New York Medical Journal.

The chamber was built by the Montreal Dental Supply Company and cost fifty-six dollars. It is constructed of galvanized sheet-iron, No. 20 gauge, rectangular in form with rounded edges. The inner dimensions are five feet by forty inches by twenty-eight inches, the latter diameter being that necessary to pass through the average door-way. The inside is stayed by light gas-pipe, spirally arranged, through which, if desired, steam can be passed. The head is made with an air-tight rubber joint between flanges of wrought angle-iron bolted together. A decided saving in space could have been effected by having the flange turned inward instead of outward

I have been able to secure a vacuum of from four to five inches in a few minutes with a hand-pump, but have refrained from carrying the collapsing pressure-test further. The weight is about two hundred pounds, which myself and my laboratory assistant have been able to carry about without much effort. We had expected that the chief trouble would be with stairways, but the real difficulty is in the tendency of door-ways to open off passages without leaving enough room to turn. My next chamber will be built smaller. The apparatus can also be used as a closed chamber without vacuum, by placing a formaldehyde lamp inside or by blowing in formalin vapor. In either case less vapor is required than when disengaged free in the room. Some preliminary experiments have also been tried in the direction of using a large rubber bag as the vacuum-chamber.

In December, 1896, I had already tried the plan of having the discharge-pipe of an autoclave, used for generating the gas for formalin, lead through a safety-valve set at a pressure of fifty pounds, in order to prevent escape of the vapor at a lower pressure than is consistent with freedom from polymerization. This device has since been independently adopted by the Sanitary Construction Company of New York, with the same object.

THE ANNALS OF HYGIENE
PUBLISHED MONTHLY
SUBSCRIPTION TWO DOLLARS
A YEAR, IN ADVANCE.
Address all communications to
UNIVERSITY OF PENNSYLVANIA PRESS

EDITORIAL

All subscriptions to "THE ANNALS OF HYGIENE" are taken "until ordered discontinued," and no agent has authority to make any other arrangement. At end of time to which subscription has been paid or promised, a bill for a year in advance, with return envelope, is sent, and if journal is no longer wanted, the subscriber should mark "Discontinue" on the bill and return to us. A failure to so return bill is considered an order to continue.

COMMUNICATIONS SOLICITED.

We are always anxious to receive short communications—500 to 1000 words—on practical subjects pertaining to hygiene. To any one sending us an acceptable article, we will forward THE ANNALS OF HYGIENE for one year *free*.

Habits and Customs.

HABIT is controlled and corrected by habit. We are all creatures of habit, and the majority of us creatures of very bad habits, so far as health and long life are concerned. Did we but realize the fact that habit is corrected by habit, and that good habits, if cultivated, would be just as natural and easy of acquisition as bad habits, we imagine that all of us would be very ready to make at least a slight effort to substitute our faulty habits with those that would be for our good.

Very few persons act upon reason ; the mass of humanity is guided solely by impulse, and that which has become a habit is that which we are always doing.

Lord Brougham tells us that he who makes sobriety a habit finds intemperance hateful ; to him who makes prudence a habit, profligacy will be as contrary to his nature as the most atrocious crimes would be to any of us.

It is evident, then, that we should cultivate hygienic habits ; it may be a little irksome and require a little thought in the beginning, but, once cultivated into "habits," their performance will be as natural and as instinctive as all "habits" always are.

NOTES AND COMMENTS

Nutritive Value of Meats.

In a recent article on the value of meats as food (in the *Dietetic and Hygienic Gazette*), Professor R. H. Chittenden corrects several widespread misconceptions regarding meat values. He says, "The cheapest food is that which supplies the most nutriment for the least money. The well-known maxim that 'the best is the cheapest' is not true of foods, for the term 'best' in this connection is ordinarily applied to that which has the finest appearance, the finest flavor, most tender structure, etc. Thus, there is no more nutriment in a pound of proteid from tenderloin steak than in the same weight of proteid from the neck or shoulder, and yet note the great difference in cost. A great deal of money is spent by people who can ill afford it, because of this notion that the more expensive cuts are the more nutritious: much of it perhaps attributable to lack of knowledge of the art of cookery. Here is a field for missionary labor that will repay the cultivation. A waste of food material is a crime against both pocket and morals." In speaking of the relative value of meat as a food, Professor Chittenden says, "Various extractives, active principles, etc., all endowed with more or less physiological properties, are likewise ingested as a part of the meat, and add to their effects, perhaps, to aid in keeping up the tone and vitality of the organism. Meats have certain stimulating properties, which distinguish them from the grosser vegetable foods. In this respect they might perhaps almost be classed with such articles as tea, coffee, etc., in their power of ministering to the wants of the brain and nerves. As Sir William Roberts well says, 'The struggle for existence, or rather for a higher and better existence, among civilized men is almost exclusively a brain struggle, and these brain foods must be regarded as a very important part of the equipment for that struggle. If we compare, as best we may with our limited information, the general characteristics of the high-fed and low-fed classes and races, there is, I think, to be perceived a broad distinction between them.

The high-fed classes and races display, on the whole, a richer vitality, more momentum and individuality of character, and a greater brain power than their low-fed brethren ; and they constitute the soil or breeding ground out of which eminent men chiefly arise.' Again, 'Trainers will tell you that the hunter and the draught-horse require to be fed differently. In the hunter is wanted rapid liberation of energy within a comparatively short space of time ; in the draught-horse is wanted a more gradual liberation of energy and for a longer period. The hunter is fed on concentrated and stimulating food, the heaviest and most expensive oats, which, if I may so express it, is the beef of vegetable feeders, while the draught-horse is fed on a lower and less stimulating diet,—on Indian corn and chopped hay, foods which tend to increase bulk and weight.' So with mankind, the nature and quality of the nutrient—aside from its containing the due proportion of the several requisite elements—exert a specific influence upon the character of the body, and the meats may be fairly placed in the front rank of foods as giving important aid towards that higher physical and mental development which belongs to the civilization of the nineteenth century.''—*Medical Times.*

The Grape Cure.

According to Dr. I. C. Rosse, in the *Maryland Medical Journal,* the first physiological effect of grapes is the promotion of the secretions and excretions without irritation of the intestinal canal, when the grapes selected are proper for the treatment and there is no contraindication. Grapes are of great value in cases of irregular digestion. They also have an aphrodisiacal effect when taken in large quanities.

The time of year at which the grape cure is most practicable at the Uval stations in Germany and Switzerland is from the middle of August to the last of October. The grapes are eaten preferably in the open air, before breakfast, and on an empty stomach, but if the stomach is weak a small crust of bread may be taken with the first portion, between seven and eight o'clock in the morning. The second portion should be eaten one hour before dinner, the third in the afternoon, between three and five o'clock, two hours after dinner, and the fourth may, sometimes, be eaten just before bedtime.

The grapes must be eaten fresh and ripe. They are to be crushed between the tongue and the palate, not the teeth. Beginning with from one to two pounds the quantity is to be daily increased half a pound until the prescribed quantity is reached, and then slowly decreased. The treatment requires from one to six weeks, during which all the heavy and greasy dishes, also all food that causes flatulence, are to be interdicted.

As a rule, the grapes especially suitable to bring about a therapeutic modification are those that contain a large percentage of grape-sugar. When the stomach will not take the grapes by eating, the freshly expressed juice may be used. They may be bottled by a special process (*procédé appert*), and employed at any time of the year.

Externally, grapes have been used in the form of baths, which are provided at some of the European grape-cure stations for persons who want to be plunged into the mash of the grapes, while it is in a state of fermentation. These baths, used principally for rheumatism, were formerly recommended by Tissot in peripheral paralysis.

The grape regimen, as an after-cure, is regarded in Germany as indispensable to the completion of the thermomineral treatment. Whether used as a principal or as an accessory recourse of treatment, in order to be well tolerated and successful, it requires the concourse of adjuvant hygienic influences, which may lead to the supposition that success has been obtained rather by such influences than by the grapes themselves. Dr. Rosse, however, has obtained the happiest results, aside from climatological influence, in patients who lived in town and used the grapes methodically at home, while from Maine to California numerous persons prompted to try the cure, after reading his first paper on the subject, have written him most encouraging results from its use.

Are Malarial Diseases Air-Borne?

Malaria or "bad air" is not a disease, but rather a cause of malarial diseases. This being admitted, not merely from the point of view of the purist, but from that of a fact-searcher, we are prepared to welcome any well conducted study that will throw light upon every avenue of ingress of the parasite of Laveran. Dr. Rupert Norton, in a paper before the Johns Hopkins Society, maintains that malarial infection is not water-borne. Our friends in the North Carolina State Board of

Health, whose health-saving work in the advocacy of a purer water-supply in rural communities we have watched with interest, are controverted in a scientific manner along with many others, whose names are given by Dr. Norton in his paper,—namely, Drs. Smart, West, Zwishon, Wagener, Hyland, Daly, Norbury, Jones, Cadwallader, Newton, Quine, Lewis, Hurley, Cowan, Ross, Hehir, Rogers, Manson, and others; concerning some of whom, at least, the suggestion is made by Dr. Norton, that, "Is not malarial disease your weak point in diagnosis?" This suggestion very logically and profitably opens the door, not so much to polemics as to an availment of the methods of Laveran and Widal in all dubious cases, or better yet, in all miasmal cases. Dr. Norton quotes Sternberg, as follows: "The facts which have been developed with reference to the transmission of cholera and typhoid fever, considered in connection with numerous recorded observations relating to the supposed development of malarial fevers as a result of drinking surface waters, have led some authors to the conclusion that malarial infection also commonly results from the introduction of the malarial parasite in this way. Without denying that this may occur, I am disposed to believe that much of the evidence which has been advanced in favor of this view is unreliable. In many cases the so-called malarial fevers which have been traced to the use of surface water from wells, streams, etc., have been of a 'continued type' and not controlled by quinine. In the absence of positive evidence as to the presence of the malarial parasite in the blood, continued or remittent fevers which resist the specific action of quinine cannot in our opinion be properly classed with the malarial fevers. If not due to infection by the typhoid bacillus, they are, at least, more nearly allied to typhoid than to the typical malarial fevers." With this is a kind of key-stone, Dr. Norton builds as an arch, in proof of a negation, that will bear a great deal of pressure from the "water-borne" partisans. He quotes Kelsch and Kiener, who hold that paludal infection is by the lungs, at least in the great majority of cases. They think the water-borne theory is not confirmed by facts, and that the cases on the "Argo" (a Sardinian ship, whose history is referred to in the classical narrative in Boudin's "Treatise on Periodic Fevers," 1834) do not support the theory. They say, however, that malaria may arise at sea, and relate one instance which furnishes no stronger proof than that of the "Argo." Soldiers in Algeria, they note, who while marching drink foul water, are no more affected with fevers than when in camp, using pure water. Towns on heights around the Roman campagna are free of malaria, although their inhabitants drink water coming from malarious regions. This they bring forward as proof against the water-borne theory, and say that foul water simply acts as a force to reduce the resistance of the body to morbid influences. The observations made by Italian physicians are among the most interesting we have. Celli, one of the best students of malarial fever, has written a paper of great value on this subject. It is a short article going to prove that water does not transmit malaria. He gives a chart showing that the introduction of a new water-supply into a certain city did not diminish the number of cases of malaria. He says, popular ideas on this matter are fallacious, and notes that persons may live in a malarious place and drink pure water and yet have malaria, while others in the same place drinking foul or "paludal" water do not have malaria. He himself gave water from the Pontine Marshes, which are acknowledged to be very malarious, in large quantities to a certain number of patients who never had malaria, without its giving birth to this disease in them. Similar evidence is furnished by Salomone Marino: "He experimented in the same manner as Celli, giving five to twenty-four litres daily of paludal water for from six to twenty-four days, and did not succeed in a single instance in producing malaria. He says that those cases of malaria which are suspected of having been caused by infection through the digestive tract are usually grave cases with short periods of incubation. He relates two cases which, as the blood was not examined in either case, do not furnish proof of his statement. One patient was very ill and took three weeks to recover (typhoid?). Stagnant water is likely, he thinks, to contain poisonous or noxious bodies which could produce gastro-intestinal symptoms similar to those sometimes caused by malaria. Bonizzardi, without relating any cases, concludes one short article with a number of deductions, from which I take the two following: 'Intermittent fever may be contracted as well by drinking water as by air,' and 'infection by air is far more fatal than by water.' Moscato, who has also carefully studied the question of malarial fevers, states, without furnishing any proof, that drinking-water as a source of infection has been noted daily by observers: '*L'acqua potablie, come sorgente del velino palustre fu rico-*

nosciuta anche da Ippocrate; quale verita e stata anche sanzionata dagli osservatori odierni.' The statement has been made that malaria may be transported from one infected district to another healthy one by a new water-supply, but the proof here is not sufficient, since the turning up of the soil for the pipes may have been the real cause. Most of the Italian observers, it is seen, are opposed to the water-borne theory." Dr. Walter Reed, of the United States army, has written well on the aerial side of the case, and his contribution to this year's volume of the "Reports of the Surgeon-General," is mentioned with special favor by Dr. Norton. Dr. Reed has paid special attention to the cases of fever at Washington Barracks and Fort Meyer, and has examined the blood of many patients. Dr. Reed does not believe in the water-borne theory. He states that "the water-supply at Washington Barracks has not been changed; it has always been the same as that of the city. The supply at Fort Meyer was changed in November, 1894, from well-water to Potomac River water. The following year the men and officers drank, as a rule, filtered and boiled Potomac River water, with the result that there were more cases of malarial fever in 1895 at Fort Meyer than during any one of the previous twenty-three years. It was also higher at the Barracks in 1895 than during any of the previous twenty-three years." There is much malarial fever in the city of Washington, and it is really endemic along the river flats, but has no apparent connection with the drinking-water of the city, since otherwise the people in the upper part of the city should naturally suffer as much, which they do not. The reports from the army posts are hard to analyze, since the officers in charge are frequently changed, and their personal views as to malaria and typhoid fever vary materially. But, as yet, all the evidence coming from the army posts is rather against than for the water-borne theory. The time is coming, we hope it is near at hand, when the laboratory for diagnostic and other medical work will be so well supported and utilized that the *ex cathedra* citation of authorities and classic cases will no longer be the order of the day. The busy practitioner cannot hope to much longer "get along" with his thermometer and his library; he must have a laboratory, not too far distant, to help him out in all his doubtful zymotic cases. Therefore, say we, multiply the laboratories! And, furthermore, let us have a strong national ministry of health. That many profitable lives and much added happiness in health are hinged upon these propositions, the future is destined to make plain either to us or to those who follow us. How soon the improvement may come we do not know, but come it will and must.—*Journal of the American Medical Association.*

The Treatment of Excessive Sweating of the Hands and Feet.

In the *Wiener medizinische Blätter* for April 15 we find abstracts of two articles on this subject, more particularly hyperidrosis of the feet. In the first, by Noebe (*Medizinische Revue*, von Loewen; *Journal de Médecine de Paris*, 1895, No. 50), the author treats of four methods: (1) The wearing of such footgear as will favor evaporation of the perspiration, such as cloth shoes. (2) The use of chemical desiccants: *a*, alcohol with tannin, alum, and naphthol; *b*, salicylated talc (a mixture of salicylic acid, alum, and talc), salicylic acid with starch and tannin, powdered tartaric acid, and sulphur; *c*, a solution of chromic acid of the strength of from 5 to 10 per cent.; *d*, a solution of iron chloride in glycerin. The so-called military sweat-powder, he says, works much better if it contains as much as 50 per cent. of salicylic acid, with the addition of tannin, alum, etc. (3) The production of complete desquamation of the horny layer of the epidermis by maceration with diachylon plaster. (4) The employment of an anthidrotic solution containing 25 per cent. of hydrochloric acid. The feet may be immersed for ten minutes in undiluted commercial hydrochloric acid twice a week for from five to eight weeks, and then at longer intervals. After each application the feet, especially the spaces between the toes, should be washed with soap and warm water, and, if the acid has caused pain, a salve should be applied. With patients who are very sensitive, a 25-per-cent. solution of the acid may be used at first, and the solution be gradually increased in strength until finally the crude acid is used undiluted. Equally good results are obtained with a 10-per-cent. solution of silver nitrate painted on the sole of the foot and on the interdigital spaces every morning until the horny layer is shed. This procedure, he says, gives better results than the employment of chromic acid, and is free from the dangers of that substance.

The other article is by Adler (*Prager medicinische Wochenschrift*, 1896, No. 39), who distinguishes two classes of remedies,

—those that act as absorbents and those that diminish secretion. In the first class, the dusting-powders are chief; but they have to be used every day, and so they soon get to be unpleasant. Moreover, they become caked with the secretion and make walking painful. Among the remedies of the second class the author has found none better than the formalin solution of the shops. When it has been used for two or three days, a sort of scurf forms and the secretion suddenly subsides. The effect lasts for two or three weeks, according to the severity of the trouble and the thoroughness of the applications. Any fissures that may exist must first be healed; otherwise the formalin will cause severe burning. Care must be taken also that the fumes are not inhaled, as they are highly irritating. When the hands are affected, only weak solutions should be applied to them.

[If any of our readers think of trying the hydrochloric-acid treatment, we should recommend great caution as to the strength of the solution employed; it would certainly be risky, we think, to begin with the use of the undiluted acid. Possibly the author has in mind something milder than what we know in this country as crude hydrochloric acid.]—*New York Medical Journal.*

Effect of the Bicycle upon the Pelvis of the Growing Girl.

Much discussion is abroad upon this subject, and many supporters are found for both sides of the question. Only the future can determine whether the harmful effects of pressure by ill-fitting saddles is to be more than counterbalanced by the general systemic, muscular, and nervous benefit derivable from the free out-of-door exercise and the improved modes of dress secured by the wonder-working wheel.

It has been said more than once that the bicycle has done more in the short time since its advent to emancipate woman from physical thraldom in matters of dress than the combined efforts of scientists, philanthropists, and social reformers have been able to achieve in all the history of their crusades against the corset.

The following from the editorial columns of the *Boston Medical and Surgical Journal* serves to show the present status of the controversy:

"Dr. T. R. Evans, of Mt. Carbon, W. Va., writing in the

American Journal of Obstetrics, draws a harrowing picture of the effects of the bicycle saddle upon the plastic pelvis of the growing girl. 'Walking,' he says, 'is necessary to the proper moulding of the semi-cartilaginous bones of the girl's pelvis in reference to natural childbearing,' while a girl riding a bicycle makes a counter-pressure of only four pounds against the weight of the head and trunk, balanced upon a too narrow and rigid surface." Dr. Evans further says:

"As in our climate the bicycle is used nine months in the year, and as the modern girl walks less and less, while more abundant nutrition, both intellectual and animal, is supplied, increasing the size of the fœtal skull, her prospects for instrumental delivery, symphyseotomy, and cœliotomy increase. It is yet too early to verify this prediction, but for years the very large increase in the number of cases in which the forceps has been used by the masters in obstetrics demonstrates the evil effects of the lack of walking.

"When nature increases the size of the fœtal head, it increases the capacity of the mother's pelvis, but such increase may be frustrated by art. Through laziness man is said to have worn his tail off by much sitting; and through the fashion of not walking woman will add to the inconveniences, if not the impossibilities, of natural labor. For centuries the horse has been utilized, but the teachings of both anatomy and propriety have prohibited the woman from bestriding his soft back. The fact is that the straddling attitude is unnatural in man, and only became popular through the chase and through war, and surgical injuries are sufficiently common on account of such attitude. The parts traversing the male perineum are sensitive and important and lie superficially. But they are slightly protected from pressure by broad and comparatively long ischial tuberosities which are near together. In addition, the perineum of the male is moderately protected by hair. In the female perineum the tuberosities are smaller, sharper, and wider apart, and it is comparatively without hair. As shown by its tissue, physiology, and function, the perineum of woman is a kind of supplemental uterus. It is padded with connective tissue, prolonged pressure upon which must cause condensation and atrophy, thus adding 'atrocious' pains in the second stage of labor and much liability to rupture.

"Dr. Evans calls attention to the fact that until after puberty the pelvic bones readily yield to mechanical influences, and thinks it probable that during this yielding period the narrow saddle will press the ischial tuberosities upward and inward, the distortion being greater the younger the girl, thus adding a serious complication to the flattened pelvis, which is the most common pelvic deformity in Europe and America. He thinks that the slight forward inclination of the body while on the bicycle may tend to increase the pelvic flattening.

" ' The difference,' says Dr. Evans, ' between the shape of the child's and the adult's pelvis is most largely due to pressure and counter-pressure through living levers, the body and lower extremities. This is well proven in the exaggerated development of the side of the pelvis used by a youth with one leg.'

" Dr. Evans, in concluding, expresses the opinion that the bicycle will predispose to placenta prævia, the basis of the contention being that all the cases of placenta prævia which he has seen have been in hard-working and active women.

" While we must admit that the pressure of an improper saddle upon the pelvis of a growing girl might have a tendency to deform it, we cannot see that Dr. Evans has advanced any cogent arguments against the use of the bicycle with a suitable saddle,—that is, one which throws the weight of the body upon the ischial tuberosities and not on the perineum. The direct downward pressure upon the ischial tuberosities ought not to force them either inward or outward, and the vigorous play of the muscles in the exercise of riding ought to have a favoring instead of a retarding influence upon the development of the pelvis. On the other hand, too much can hardly be said against the use of improperly constructed bicycles by women whether growing or grown, and Dr. Evans's contention that the bearing of the weight upon the perineum might tend to pull the ischial tuberosities inward is a sound one. It should not rank, however, as an argument against the use of the bicycle by growing girls, but rather as an additional reason why they should not ride on improperly constructed saddles. By the simple precaution of choosing a proper saddle, it is to be hoped that our growing girls may escape the instrumental deliveries, symphyseotomies, and cœliotomies which Dr. Evans thinks are threatening them as a result of the pleasant and healthful exercise of bicycling."

Meat-Poisoning.

Apart from added poison and parasitic disease, meat may become poisonous in three ways: (*a*) from the presence of disease, at the time of slaughter, in the animal from which the meat is derived; (*b*) from micro-organisms which attack or develop in meat subsequent to slaughter; (*c*) from the presence of toxalbumoses or of ptomaines. The symptoms produced by poisonous meat may be grouped in two divisions,—(1) those due to a true infection; (2) those due to simple poisoning. In the first division the train of symptoms runs the usual course of an infective disease, as witnessed by the occurrence of symptoms suggesting typhoid fever in 600 people who had eaten of meat from an animal killed while moribund. In the second division the symptoms usually resemble those due to acute gastro-enteritis,—violent vomiting and purging, rapid loss of strength with extreme depression, cramps in the calves of the legs, and general coldness of the surface, with subnormal temperature; sometimes the temperature is elevated. In these cases the average prodromal period is shorter than in those of Class 1, and the acute stage of the illness does not exceed a few days at the longest. The post-mortem appearances comprise those of gastro-enteritis. Some toxines produce special symptoms, as, for instance, an atropine-like base, found in decomposing meat—sausage, ham, and certain kinds of sea-fish (sturgeon)—which is said to produce symptoms resembling atropine-poisoning. The toxine or toxines (probably mixed products) contained in the same meat may produce different symptoms in different people. This is probably due to an irregular distribution of the toxine (and in some instances of the bacteria) in the bulk of the meat. This also accounts for the varying intensity in the symptoms of different individuals who have eaten from the same meat-supply, and also for the negative results which so frequently attend the bacteriological and chemical investigations of those portions of the meat which remain after an outbreak of meat-poisoning. These negative results are probably also in part due to the fugitive or unstable nature of the poison,—ptomaines or toxalbumoses. As many of these chemically-formed toxic products resist the prolonged action of heat, no amount of cooking can be relied upon to render harmless infected meat. In several instances it has been observed that if the flesh of an animal, in a certain stage of septic disease at the time it was slaughtered, be eaten shortly afterwards, it may not produce any ill effects ; but if it be kept for some days it becomes toxic, and will produce the usual symptom of meat-poisoning in those who eat it. The flesh of healthy animals may become poisonous by keeping, either from contamination with micro-organisms which are pathogenic to man, or from the production of toxines in the meat owing to the action of non-pathogenic putrefactive micro-organisms. Meat may be infected with bacteria after it has been cooked, as well as when it is in the raw state. Although, in a general sense, we understand the processes that take place in healthy meat which is undergoing decomposition, we are far from being able to satisfactorily explain all the attendant circumstances. Bad or putrid meat is proverbially dangerous as a food, and yet meat that is in an obvious state of decomposition is frequently eaten with impunity. Statistics afford discordant results with regard to the kinds of meats which most frequently give rise to outbreaks of poisoning, pig meat, potted meat, cow and ox meat being more commonly the offending varieties. The percentage of deaths is difficult to estimate, as the number of persons attacked is frequently not stated, the fatal cases only being recorded. Outbreaks with a mortality of 1.6, 4.3, 30, 40, and even 60 per cent. have been recorded. As regards preventive measures to be taken in relation to meat-poisoning, too much emphasis cannot be laid on the necessity for stringent supervision of the lower-class butcher. There should also be a close inspection of all kinds of prepared and preserved meats. Cleanliness should be observed in all places where meat is prepared or stored. The cooking must be thorough. This will destroy all micro-organisms, but not necessarily a toxine, which would retain its virulence in spite of having been subjected to the temperature to which the meat would be raised. Rigid supervision, therefore, of our source of meat-supply and cleanliness in its preparation for consumption are necessary.—Mann, *Medical Chronicle*, July, 1896.

The Hygiene of Swimming-Baths.

In a paper upon the swimming-baths of Berlin, Baginsky makes the following observations :

(1) The swimming-baths constitute a hygienic arrangement for the population of those large towns which cannot make sufficient use of the river bathing establishments.

(2) For this reason the swimming-baths should be placed under constant sanitary and police control, which should attend to the choice of location, cleanliness, ventilation, clothing-closets, soap-boxes, normal condition or character of the water in use, the quantity flowing in and out, the regularity of the complete cleansing of the tanks, and the daily number of bathers.

(3) Thorough scientific investigations as to the limits of the use of the bathing water should be made under the charge of the sanitary and police officials.

The foregoing observations appear to have been written in consequence of certain criticisms which had been made as to the management of the swimming-baths of Berlin, six in number. The following are the principal points of interest relative to these baths:

The Neuenburger Street bath or tank has a size of 12 by 8 metres and a capacity of 160 to 170 cubic metres (42,000 to 45,000 gallons). The number of bathers averages 300 to 400 daily in summer and 100 in winter.

The Askanian bath has a capacity of about 40,000 gallons.

The Admiral's Garden bath, Friedrich Street, is 15¼ by 9 metres, has a capacity of about 63,000 gallons, and is inlaid with glass tiles.

The Commandant Street establishment has one large swimming-tank for men, 26 by 16 metres; one tank for learners, 9.2 by 5.15 metres; one large tank for women, 17.6 by 9 metres; and one small tank for women, of the same size as the small tank for men. The depth of the large tank ranges from 1 to 4 metres.

Cleansing baths are also provided, which must in all cases first be used before the bather enters the swimming-tanks.

Of the two public city baths, one has a capacity of 80,000 gallons, and accommodated 20,014 bathers in the fiscal year 1894–95. The other, with a capacity of 60,000 gallons and a size of 15 by 8.5 metres, accommodated 141,281 bathers in the eleven months ending February, 1896, or an average of 539 in summer and 280 in winter. The water was partly that of the public supply and partly from wells.

The frequency of renewal of the water in the swimming-tanks varied in the different establishments, but was usually daily or every other day in summer, and twice or three times a week in winter.

In this connection it may very properly be stated that the town of Brookline, Mass., was the pioneer town in New England to establish the first municipal, all-the-year-round bathing establishment, with all the necessary appliances of cleansing baths, swimming-tanks, etc. Instruction is given in swimming, and a town swimming club has been organized. The establishment is a model and well worthy of imitation by other municipalities, and it is to be hoped will be appreciated and supported in a way to encourage such imitation.—*Boston Medical and Surgical Journal.*

Built like an Engine.

On the Lake Shore Railroad, in looking over the record of a locomotive engine, I found that in four years' time it had been travelling 300,000 miles, and it had been sick and laid up for repairs in all about a month. The life of an engine is about fifteen years, if it is properly used and run on the main track, but if it is switched about, hither and thither, it may not last so long as that. Of course, the life of an engine depends to a great extent upon its treatment. If the vital or important parts of an engine—namely, the cylinder, the safety valve, the boiler, etc. —are properly cleaned and looked after, it will live perhaps fifteen years and travel about 1,500,000 miles. The life of an engine is said to be in the boiler, and it depends a great deal upon what kind of water is used. Now, we have been furnished with an engine, a wonderful organism, that ought to last about a hundred years; and I base this conclusion upon the fact that in the animal kingdom we find that animals reach their maturity—their perfection of development—at about one-fifth of their natural life, and figuring on that basis, the average life of a human being ought to be about a hundred years. Of course, this is barring unfavorable environment and unfortunate heredity, which we cannot help, and which must be taken into account. But when we look over the field and find that one-half the human race die during the first year of their life, it is certainly a sad commentary, especially in the line of preventive medicine and hygiene. The plants in our hot-houses can show a much better record than can be shown in human life. During the last fifty years the longevity of man has been increased about 25 per cent. Perhaps one of the greatest discoveries of modern times has been the introduction of vaccination, by Jenner, for the prevention of small-pox, and this is in the line of preventive medicine. Of course, when we speak of medicine, we refer to the applcation of drugs as a remedy for disease. Now, a physician should never flatter himself that he cures a disease. The only doctor who is successful in curing a disease is Nature, and she is always on the ground first and knows exactly what to do. The scientific and practical physician will endeavor to watch her movements and see what she is trying to do, and then assist her.—Julius King, M.D.

No Natural Decline of Small-Pox.

It is absurd, says the *British Medical Journal*, to talk of a natural decline of small-pox, as plague has declined and vanished, from this country at least, when we observe the virulence of small-pox in local outbreaks, and when we think of the very large mortality which countries like Spain and Russia still show, countries where there is very little vaccination. Here are the small-pox death-rates per million living for the single year 1889 in the following provinces of Spain: Almeria, 3080; Murcia, 2670; Corunna, 1250; Malaga, 1340; Cadiz, 1330; Cordova, 1400. The rate for Germany is four for the same year.—*Medical Times.*

Outgrowing Disease.

It is a common experience to hear parents say of their children, when asked why therapeutic attention had been postponed, "I thought he would outgrow the disease." Physicians are frequently guilty of telling parents they will recover their health by "outgrowing" the disease. Such a statement is hardly pardonable. I should consider it equivalent to a confession of ignorance, and indicate the necessity for a change of medical attendants. Two such instances have recently come under my personal observation,—one of epilepsy, the other of post-hemiplegic athetosis, in which it was said the child would outgrow the trouble.

Let us look at the facts fairly. If we have disease, is it not *prima facie* evidence that the *vis medicatrix naturæ* inherent in all animal protoplasm has been brought below the line of normal resistance? Is it not evidence that the great functions of the human economy are awry? Now such a case needs care and attention, though usually dismissed with a hasty prescription.

When, after a number of futile attempts, therapeutics fail, we certainly should not label the case as one which will "outgrow" disease. Granting the child does, is not the organism imperfectly developed, warped? Is not its warp and woof entangled? Is not the brain poisoned? Is not malnutrition the heritage? And who is to blame? I hold that a man practising medicine, who is earnestly, honestly, and God-fearingly looking for the best interests of his cases, will confess his utter ignorance and inability rather than use a contemptible subterfuge to cloak his inveracity and dodge the blame. We know or we don't know, and our patients are entitled to the exact state of our knowledge. Let us, then, unite in an honest endeavor to bring about a proper state of affairs, and refuse to cloak ignorance or dishonesty under a soft, euphonious or beguiling title. Men should be men, not mice.—*New Albany Medical Herald.*

Better than Modern Foot-Ball.

Students and all who sit much of the time should take great care to sit erect, and never in that lazy attitude that rests upon the lower spine and compresses the bowels. I used to think that the right to sit on my backbone and put my feet higher than my head was one of the liberties that my revolutionary forefathers fought and died for; but I have since learned that it is a liberty we may die for ourselves. Let us briefly inquire what may be done for those who are deformed, and whose shape is fixed by cartilage hardened by age. . . . It is only required to spend fifteen or twenty minutes in the morning when one has little clothing to clog the movements, and the same at night, in exercising the muscles that are not often used, and especially in bending the deformed spine back to its natural shape. And often during the day the chest must be raised high, the abdomen drawn firmly in, and the lungs slowly filled with air and slowly emptied. By these means, Mr. Edwin Checkley, who was a feeble child, and is still a small man, has attained wonderful health and endurance, and is able to lift three common men and run with them. Who is there that cannot raise the chest, contract the abdomen, and take long breaths? And this, often repeated, will in time cure deformity, enlarge the lungs, and ward off an army of diseases. —Frederic M. Heath, in "Why do Young People Die?"

Some Octogenarians.

Gladstone and Bismarck are both octogenarians, and the Queen of England is hale and hearty at 77. Bismarck is a living example of the value of a carefully-regulated diet, wisely selected to suit the individual. Some years ago this celebrated man, who practically ruled the German empire, also dictated to his physicians instead of being governed by them. The result was that his herculean frame became loaded down with fat, which interfered with his vital functions, and, in addition, he was threatened with such serious disease that he apparently had but a short time to live. When he first consulted his present physician, that astute man positively refused to prescribe unless his distinguished patient agreed to follow his directions implicitly. It is said that at first Bismarck submitted with a very bad grace, but he soon saw the advantage of this course by a marked improvement in his health and strength. If his previous life had been lived in accordance with the laws of hygiene, he might still have many more years of usefulness before him. His Holiness Pope Leo the Thirteenth, who was born in 1810, bids fair to become a centenarian. The physician in attendance upon him reported last winter that his illustrious patient was in good health, and that he adhered strictly to any advice given him.—Quoted.

The Afternoon Nap.

The frequency with which medical men are asked whether it is harmful to indulge in the "afternoon nap" is not, perhaps, surprising, for several reasons. Most persons have had experience of the seductive charms of the somnolence which has followed the comfortable ingestion of a mid-day or evening meal. The meal finished, the diner arranges himself comfortably in an arm-chair ; it may be he lights a pipe or cigar, takes up a newspaper, and prepares to make the most of the restful condition of his mind and body. But nature soon begins to assert her sway. In time, the eyelids close, the head begins to nod, the newspaper falls from the hands ; the pipe, no longer supported in the mouth, falls to the floor, and the symptoms of a nap are complete. Whether the "winks" be 40 or 100 in number, the result is the same,—a short, sound sleep. Then comes the question, Is it harmful thus to fall asleep after a meal ? By no means ; for the very obvious reason that the process is merely a physiological one, and as such, when it occurs, is quite natural. When digestion is in progress, nature has arranged that all the available blood in the body shall be collected in and about the digestive organs. Consequently, the blood-supply to the brain falls to a low ebb, and thus sleep is easily induced. On the other hand, of course physiologically, it is wrong for brain work to be attempted immediately after a solid meal.—*Medical Press.*

The Prevention of Sea-Sickness.

M. Charteris says most passengers setting out for sea voyages, whether long or short, commence their trip under conditions unfavorable to exemption from sea-sickness. They eat heartily and unwisely. The result is, when the steamer gets under way and meets the ocean swell, their stomachs rebel and expel their contents. It cannot be too strongly insisted upon that the diet for the first two days in a long voyage should be "dry" and "spare." No full meal should be indulged in. Soups and pastries should never be taken.

But experience shows that diet, though very important as a prophylactic, will not be sufficient to guarantee exemption from sea-sickness. Other means must be adopted, and of these the most successful are (1) a clearing out of the primæ viæ, not by a saline, but by a liver-acting aperient, such as calomel or blue pill, which should be taken on the night before embarkation, and be followed in the morning by a saline purgative, such as citrate of magnesium. (2) When on board the steamer, if the passage be by the night service, a full dose of the solution of chloralamide and bromide of potassium, known as chlorobrom, should be taken, and the passenger should at once retire to his cabin and rest and sleep. If by the day service, a minimum dose should be taken: the passenger should remain on deck. Only under exceptional circumstances is a second dose necessary.—*Canadian Practitioner*, March, 1886.

The Art of Avoiding Colds.

It is better to avoid a cold, if possible, says the *Journal of Hygiene*. Many have this art; others seem never able to acquire it. It is to a certain extent a matter of constitution, of habit, of manner, of living, and of mental hygiene, the mind cure, if you like to call it so. Some persons instinctively know the moment a cold begins to come on, and by stamping their feet hard on the floor and mentally defying it, break it up at once. Others sit down by a hot fire and drink very hot water and get into a perspiration, then go to bed. Others inhale very hot air before a hot wood fire for a few times. Others inhale hot steam from a steam-kettle, being careful not to bring the steam too near the mouth and nose and burn them, but throw a blanket over their head and let the hot steam come under it, and inhale it as hot as is convenient. A cold is a sort of nervous disease, caused probably by a nervous shock from cold air on the neck or base of the head, or abdomen, or back, or feet, or legs. These are the parts most susceptible. By toughening the skin and its nerves they bear cold air better, and thus colds are avoided. The habitual cold bather rarely has a cold, but many do not think they can bathe regularly, and so the skin becomes more and more sensitive, until finally the very least change of air produces a bad effect. The number of persons who have almost or quite emancipated themselves from colds by hygienic precautions is large, and is growing larger every year, but there remain multitudes still in bondage, and it is for such these hints are given.

Pullman Wash-Basins.

Many of the sleeping- and drawing-room railway-cars of both Pullman and Wagner pattern are fitted up with wash-basins which are an abomination to one with a nice regard for cleanliness, and from the manner in which they are used are very liable to carry contagious disease. The basins are of metal, and the hot and cold water come in through slit openings near the top, sending the water streaming down the side of the basin. In other words, there is no free running stream in which one may wash if one chooses to do so. The water escapes when a metal rod with a plug at the bottom is pulled up. This rod passes through the back part of the basin, leaving a pocket behind it. Try to clean out the filth which this pocket harbors and see how difficult, not to say impossible, it is to do so.

Now observe how these basins are used. A man comes to the toilet-room in the morning, and if he is first he may have what looks like a clean basin to wash in, for the car-porter keeps it shining. But take a clean towel and investigate this filth-pocket at the back and you will find it not so clean as it looks.

The average man turns on the water, fills the basin, and washes himself. He lets out the water and then draws a glass of drinking water and proceeds to wash his mouth and teeth over the basin, hawking and spitting into it in a really disgusting manner. He may give the basin a slight rub with the towel on which he has wiped, but many do not.

Number two now takes his turn. In many cases, as we have observed with our own eyes, he turns on the water without washing the basin, and repeats the performance of number one. This may go on until perhaps ten or a dozen men have washed in the same basin.

Observing how few men pay attention to this matter, we fear we may be considered ''cranky nice'' about it, but when one considers the danger of contagion from persons having syphilis, gonorrhœa, tuberculosis, or diphtheria, it might well make one fearful of washing in such a basin, even if he sees nothing uncleanly in the practice. The remedy, as we see it, is a running stream over a basin which has an outlet without a stopper.

There is very little in the objection made that it causes a great waste of water, if the water is allowed to run only while the basin is in use. We have repeatedly measured the amount of water required for a thorough ablution in a running stream, and it is no more than is usually taken in the ordinary way of filling the basin. A change in water-basin construction should be demanded by the travelling public.—*Ohio Sanitary Bulletin.*

Penalty for Indirect Murder.

Dr. St. Clair Thompson, London correspondent of the *Therapeutic Gazette*, reports a verdict that has lately been obtained which, if upheld, as it deserves to be, in England, and imitated in this country, will enable us to do with a very little more sanitary legislation. At the Birmingham Assizes a special jury did the work of many acts of Parliament by giving tremendous damages against a ''local authority'' which had poisoned a citizen with sewer-gas. The citizen was a Mr. Smith, and an action was brought on behalf of his widow and six children against a rural district council whose sewers were found to ''ventilate'' into his house. This, it was alleged, gave him typhoid fever, whereof he died. An entirely unsolicited supply of sewer-gas to Mr. Smith's premises was cut off, some time ago, by order of the district council. But the work was done in a slovenly way; and it was held that the leakage accounted for the disease. The plaintiffs claimed $50,000; the jury gave them $17,500. An effective penalty like this will make "local authorities," in vulgar parlance, "sit up," and will show that sanitary legislation is not a new expression of opinion.

Health Conditions in School-Life.

I have long felt that the teaching and the medical profession ought to be more closely allied than they have been in the great work of making the most of the rising generation. While it is the province of the teacher to equip the young mind with such knowledge as will be required in the coming life, and to impart such training and culture as will best fit the individual for the social sphere to which he may be called, it lies rather with the medical man to maintain health and vigor, and so promote full growth and development of the organism which is the recipient of that teaching and culture. The real and ultimate success of the teacher must depend, not only upon his own abilities, but also, and in greater degree, upon the organic condition of the material with which he has to work. One may as well expect to win the Derby with a weakly, ill-shaped horse as to win a prize in the great race of life with a body and brain in a like condition. No amount of cramming and training will get a strong mind out of a weak brain, and this brain physique must depend upon the health and vigor of the entire organism during the period of development.—Strachan, in *Edinburgh Medical Journal.*

The Science of Change of Air.

Dr. Robinson (*National Review*, July, 1896) says, although "change of air" is one of the most generally recognized means of restoring lost health, very little is known as to the reason why a temporary removal to a new district is frequently of such great benefit to invalids.

Sea and mountain air is usually held to be beneficial on account of its small proportion of organic impurities rather than to the amelioration of extremes in temperature. It is a fact beyond dispute, however, that invalids going from a severe to a mild climate often derive great benefit, although statistics show that the natives of these localities are not favored in any degree by immunity from similar affections. There seems to be virtue in mere change. This may be explained on the ground of man's former nomadic habits, which probably left a lasting impress on the human frame.

Infantile Athletics.

Before the New York Academy of Medicine Dr. Henry Ling Taylor read the paper. When one considered the muscular structure it became evident that man was not destined for a life of inactivity. The manner of obtaining an existence by ancient man, or man in the uncivilized state, necessitated much exercise, and at the present day we found ourselves with a physical system whose healthy function was not in harmony with rest. Growth itself implied exercise, and it was not without significance that fœtal movements began at least five months before birth, and the infant was ushered into the world with a cry. In waking hours its small limbs practised vigorous movements, an act superficially unimportant, but which was necessary to growth and power. Our purpose should be to encourage freedom of movement, but instead mothers swathed the baby in much fine linen and prepared the way for debility and sickness. What a contrast between the bringing up of the baby carried and jolted on the back of the African mother and that of the baby raised under the restrictions of city life! It has been observed that in cities infants showed much more vigor at birth than they did a year or two later.

Dr. Taylor advocated short dresses at an early period, so that the little one could kick freely, two air-baths daily, with play and romping, and rubbing or washing and rubbing of the surface. The feet were better off without shoes or even stockings. The natural tendency to play should be encouraged in children, and long tasks should not be imposed upon them, as they tire much easier than grown people under work. The baby must not be encouraged to walk too soon before sufficient physical development had taken place, lest injury result.

Medical Inspection of Schools in New York City.

The Board of Health has recently taken another pioneer step for the protection of the health of school-children,—daily inspection at the time of assembling by competent medical inspectors. After thorough investigation the board has satisfied itself that "a material reduction in the number of cases of sickness and death from contagious diseases can be secured by a daily inspection of the pupils of each school by a medical inspector, and by ascertaining whether children absent from school are sick with contagious or infectious diseases." . . . For example, in one case a baby was reported dead from diphtheria, and her brother was found to attend a class in which diphtheria cases were occurring; subsequently this boy was himself found to be suffering from true diphtheria, and to have infected another child in an adjoining apartment as he had infected his sister. The investigation shows that in cases, by no means infrequent, where one or even two children of a family have been fatally stricken with diphtheria another child of the same family has continued to attend school, afterwards developing the disease himself and infecting others among his school-mates. In thirty-seven cases of measles discovered during the first three weeks of October, in a designated district, twenty-four were contracted in schools. This board's example—in doing away with slates, pencils, and sponges as a means of protection against diphtheria—has been very generally followed in other cities, and is making headway in country schools. It is much to be hoped that this example, too, will be followed by the boards of health and the school authorities generally.—*The Sanitarian.*

The Wages of Uncleanliness.

The terrible plague raging in India is claiming victims by the thousands. In America the people shudder at the thought of yellow fever and small-pox, which is nothing in comparison to India's terrible disease. Remember the prime cause of this plague is filth, unsanitary conditions. People who fail to keep themselves and surroundings clean always pay the penalty in pain and death. Promptly abate everything of a disease-breeding nature and you will not only prevent sickness, but also death.

The bubonic plague, which is so terribly violent in Bombay, India, is regarded as the most destructive of all known epidemics. The percentage of fatalities is rarely under 60 per cent., and often 90 per cent. of those attacked die. The symptoms generally resemble those of other severe fevers. Great weakness and mental disturbances occur, and are followed by coma and death. During the early stages of the disease dark lumps, or buboes, appear on the skin, caused by subcutaneous hæmorrhages, and there are glandular swellings in various parts of the body. In the latter stages of the disease carbuncles are developed. No specific treatment for the plague is known.—*Metropolis*.

Sandow's Example.

The example of Sandow is not altogether a desirable one for our boys. To be well developed and to become a strong man is certainly a worthy ambition for any boy ; but when carried to the extreme of producing such bulky muscles as Sandow exhibits, the example may be most pernicious. Dr. Lydston says that Sandow is confronted by two dangers. First, death at an early period after complete suspension of his athletic strain ; and, second, death at middle age, or soon thereafter, from a continuance of his work. So soon as he rests from his muscular exertions, he will not be able to bring about a corresponding involution of his heart and lungs. Disuse means decay, and these undeveloped organs will be very likely to undergo a rapid degeneration. Sandow is a wonderful man, but his example is pernicious. His system of muscle building is dangerous.--*Good Health Magazine*.

Be Good to Yourself.

"Think deliberately of the house you live in,—your body. Make up your mind firmly not to abuse it. Eat nothing that will hurt it. Wear nothing that distorts or pains it. Do not overload it with victuals or drink or work. Give yourself regular and abundant sleep. Keep your body warmly clad. Do not take cold ; guard yourself against it. If you feel the first symptoms, give yourself heroic treatment. Get into a fine glow of heat by exercise. This is the only body you will have in this world. Study deeply and diligently the structure of it, the laws that govern it, the pains and penalty that will surely follow a violation of every law of life and health."

Paracelsus on Doctors.

This prominent physician flourished about four hundred years ago, and his "original" ideas made him somewhat unpop-

ular with the fraternity. He said, "He who can cure disease is a physician. Neither emperors nor popes, neither colleges nor high schools, can create physicians. They can confer special privileges and thus enable a person who is not a physician to appear as if he were one; but for all that they cannot make of him what he is not. They can give him permission to kill, but they cannot enable him to cure the sick. The best of our physicians are the ones that do the least harm. But unfortunately some poison their patients with mercury, and others purge them or bleed them to death. There are some who have learned so much that their learning has driven out all their common sense, and there are others who care a great deal more for their own profit than for the health of their patients. Medical science may be acquired by learning, but medical wisdom is the gift of God."
—*Popular Science News.*

The Negro.

The Tennessee State Board of Health, in speaking of the large negro population of Nashville and the death-rate, says, "The average African regards it as his 'paradise,' and hence they flock to this city in vast numbers, where vice, disease, voodooism, and almost total neglect of hygiene and proper sanitation soon play havoc with the race. The colored people are also lacking in constitutional vigor and more readily succumb to certain maladies than their white brethren. They are specially predisposed to tuberculosis and scrofulous diseases; their bones are massive, but spongy, lacking in strength and density; the brain and nervous system generally do not attain that high degree of development characteristic of the Caucasian race. The strumous diathesis universally prevails, and, although the negro enjoys comparative immunity from malarial diseases, he readily succumbs when attacked by gastro-intestinal disorders or disease of the lungs and other viscera."

Tobacco, Tea, and Champagne in England.

The great increase in the consumption of tobacco, especially among growing lads, cannot fail to have its due effect on the development of both mind and body. The net revenue yielded last year by the tax on tobacco amounted to $52,500,000, this being more than $1,500,000 in excess of the sum afforded from the same source during the preceding year. This excess is attributed by the chancellor of the exchequer mainly to the increase in the consumption of cigarettes. Another point revealed by the budget is the increase in the consumption of tea, 10,000,000 more pounds having been consumed during the past than in the previous year. That we are not becoming a more temperate nation is shown by the fact that in 1895 no less than 1,200,000 extra bottles of champagne were consumed.—*Therapeutic Gazette.*

What's in a Name?

That was a decided advance in culture up in New York the other day when a coroner's jury pronounced a man killed in a prize fight died from cerebral excitement and not from anything that had been done to him by the man who had knocked him around for fifteen minutes and then over the ropes. The fellow grew so much excited at the thought of being unable to respond to the call that he burst a blood-vessel. The jury consistently recommended that nobody be hereafter allowed to engage in a prize fight until he had been examined by a competent surgeon and pronounced able to withstand the excitement of the ring. Nothing quite equal to this has been noted since a coroner's jury in Texas returned a verdict that a man found hanging to a tree in a swamp had come to his death from exposure to the malarial influences of the locality.—*Tampa Times.*

Americans Use Medicines.

Professor Ulrich says the American people are a great medicine-taking nation. If the quantity of drugs prescribed by physicians, the masses of patent medicines, the barrels of so-called home remedies, such as teas, decoctions, infusions, and other monstrosities swallowed by the American people were ascertained, collated, arranged, and published in a book it would strike the reader dumb with astonishment.

Our Bodies.

Bodily health, says O. S. Fowler, immeasurably important in itself, is infinitely more so as a means of enhancing mentality and morality. Sick persons cannot think, cannot feel, cannot love, cannot remember, cannot study, cannot worship, cannot do anything in proportion as they are sick. Keeping well is the first art of living well, and getting well the next. Health is paramount because the means of all else. Let all study this greatest of all the arts of life, the art of taking the very best possible care of our bodies in general, and of brain and nerves in particular, and those of our children. Duly consider the infinitely greater importance of the formation of good brains in your children than of educating them. First get brains before you try to train them.

Teachers as Health Officers.

Teachers in public schools are but half-discharging their obligations in promoting the intellectual welfare of their pupils alone,—they must be efficient health officers as well. Upon them more than upon any other functionary depends the physical well-being of the scholars. The time is at hand when sanitary knowledge will be considered an essential requisite in the qualification of teachers. The dual responsibility of training the physical along with the intellectual, as recognized in modern educational methods, should be delegated only to those who, by training and experience, are capable of maintaining the best hygienic conditions as regards the school-room with its accessories as well as the personal requirements of the pupils.—*Health Magazine.*

Advantages of Sleep.

In reply to the question, Is it wise for a man to deny himself and get along with a few hours' sleep a day to do more work? Tesla, the great electrician, replied, "That is a great mistake, I am convinced. A man has just so many hours to be awake, and the fewer of these he uses up each day the more days they will last,—that is, the longer he will live. I believe that a man might live 200 years if he would sleep most of the time. That is why negroes often live to advanced old age, because they sleep so much. It is said that Gladstone sleeps seventeen hours every day; that is why his faculties are still unimpaired in spite of his great age. The proper way to economize life is to sleep every moment that is not necessary or desirable that you should be awake."

Microbian Dangers of Sweat.

A *savant* whose works are appreciated by all the world, Professor Arloing, has just made another sad germ discovery for humanity, according to the *Journal de Médecine de Paris*. It has been found that human sweat is full of microbes. Tremble, poor humanity, that your sweat is toxic, and toxic to a high degree. Yet it has been ordained that man should earn his bread by the sweat of his brow ; that, after all, may not mean the sweat of his undergarments. This is a Cartesian theory for medico-theologians to solve.

Dr. Arloing has experimented as follows : He took the flannel undershirt of a young man who had danced all evening. This shirt was macerated in distilled water and the liquid thus obtained was injected into dogs ; the animals grew somnolent, *and died at the end of a few hours*, after having had violent diarrhœa. On autopsy the entire digestive tube was found to be congested ; the liver presented yellowish patches, that characterize infected hepatic organs ; the auriculo-ventricular valves were thickened, and the cardiac cavities filled with white clots.

But shall we say man is the only being whose sudoriparous glands secrete such a poison ? The child, the woman, the beautiful young maiden who gives herself up to the love of Terpsichore, also transpire. Does their sweat become toxic to the same degree ? Ah ! most potent germ-theorist, we beseech that it is not so !

Alas ! more terrible experiments still have been made with the frilled pairs of unmentionables made of softest linen, worn over the entrancing extremities of bewitching blondes and beautiful brunettes. It was found to be an impossibility to secure a flannel undershirt from even a Parisian ballet-dancer, for these charming *danseuses* will not wear such disgusting objects as flannel when they go to a ball. However, Dr. Arloing, with the connivance of an accommodating washer-woman, procured a pair—let us call them leggins—worn high on the thighs, etc., and other frilled articles usually worn by fair nymphs who love dancing in the lightest possible under-attire. The result was most terrible ! The pantalettes, macerated in distilled water, gave out the most powerful toxics. Yet there were differences in the symptoms observed on animals. Instead of the somnolence observed in the first subjects injected with male sweat, the female sweat induced excitation and clonic contractions in the animals experimented on; even in male rabbits as well as dogs the injection of female sweat induced genital erethism. Death only ensued some hours after the ultimate development of paralytic symptoms.

One is lost in conjectures as to the difference of toxic effects according as the liquid is derived from masculine or feminine perspiration. It will be necessary to institute new experiments not only to control the first, but yet to assure the toxic effects of the sweat, and as to whether the effects differ as the sudoriparous secretion is gathered from various portions of the body. There is no reason to suppose, besides, that the sweat from a female's underwear would awaken a genesic sense in an impotent buck rabbit. It is barely possible that genesic excitation is only induced, too, by feminine sweat collected in certain special nameless portions, and may be due to an active principle *sui generis*,—for instance, the *odor della feminata*. It would be well if one of your distinguished American animal-juice experts—for instance, Hammond—would study this new discovery closely. A specific for impotency, once given to the masculine world, will assure a magnificent fortune, and the memory of Brown-Séquard receive yet another tribute of respect.

Ah! what a beautiful but sad thing is medical science! Hereafter it will be necessary to think twice before jumping into an animated quadrille or the lascivious waltz, not to mention even the modest polka. Reflect well, ye timid dancers! If tempted to steal a kiss from a pair of white shoulders, even with the prettiest girl in the dance, do not forget to rinse your mouth afterwards; there are microbes in kisses. As for the sweat of underclothing, of course, ye will never be so unfortunate as the poor rabbit. If, perchance, such perspiration is absorbed, prepare to die; the microbes of sweet sixteen are especially fatal. A piece of good advice: If you have no carbolic acid at hand, take four or five horns of French brandy; then you will not care whether the microbes keep or not. Alcohol is the most excellent of all antiseptics; germphobia will disappear in the presence of all good wines, and even old lager.

We have mentioned the inconveniences of kissing before. We have told how wise medical men advise the poor public to beware of the lips of beauty as even more dangerous than the surrounding atmospheric air, so full of germs of all varieties of disease. But there are cavities as well as surfaces that abound in germs; these cavities are dangerous when emotion is allowed to get the better of good judgment. Poor humanity! When kissing and dancing are prohibited on account of microbes; when one is no longer allowed to expectorate except on a handkerchief, for the benefit of the laundress; when the milk is tuberculous and the butter has the glanders, the cheese the blind staggers, and the white sugar Bright's disease; when the oyster gives typhoid fever, and champagne results in locomotor ataxia,—but why, when, wherefore? The whole circumambient atmosphere is full of germs. There are probably no more now than Adam had after his expulsion from Eden, and such as are left were preserved by the good Noah on his ark. Yet, gentle reader, modern science has led us to fear microbes. No more kisses, no more affection, no more love, nothing but carbolic acid and bichloride of mercury. Would to Heaven all the bacteriologists of the present day would take an overdose of the latter and give mankind peace,—aye! eternal peace. The constant repetition of the microbian tale is rapidly becoming a medical chestnut, and a very, very wormy one at that.

Let us reflect, in the mean time, that the experiments of Dr. Arloing have been made on rabbits and dogs. This is not always conclusive evidence. We must not fail to show some little respect to bacteriology, although it has set the whole world in fear and trembling; there are microbes, it is true, and they shamefully abused the dogs and the rabbits. Speaking of rabbits, however, the dames of the Morbœuf part of Paris, otherwise Breda, claim that the rabbit does not resemble man in many respects, and the Breda dames certainly should know. A liquid that kills a quadruped may not injure a biped in the least. Therein lies the innate weakness of vivisection experiments on animals. In physiology and bacteriology, rabbits, guinea-pigs, and dogs are served up with all kinds of microbian sauce. When Dr. Arloing repeats his experiments on himself, or on some animal closely resembling man,—the *hog*, for instance,—we may be more fully convinced of the fatality of sweet microbes. While awaiting the result of such experiments, however, sweating will continue as usual at the old stand, along with spitting and other healthful comforts. Beautiful forms will be hugged, sweet lips will be kissed, the world will go on singing and dancing, eating and drinking forever, despite the efforts of modern medical philosophy to embitter all human existence. Let the bacteriologist put his veto on everything, if he will. Kissing will still have partisans, and all the thunder of Pasteurian humbuggery will prove impotent to stop the passion that rules the world. Let the owl-faced bacteriologist meditate on the old axiom, "*Who wishes to prove too much proves nothing.*"—*Lancet-Clinic.*

The Moscow Congress and the Israelites.

Dr. Lutaud again discusses the Jew in medicine. As this is an old story, the Israelite having been in medicine ever since a rib was resected from Adam's side for Eve's benefit, the world need expect nothing startling. Yet the Twelfth International Medical Congress is to be held in Moscow this year. The choice of this Russian city has raised serious objection in Germany and North America, where so many Germans and German-American physicians are established. The principal objection arises from the attitude of the Russian government *vis-à-vis* to the Israelite. We know the Czar of all the Russias forbids any Semitic invasion, and the rights of naturalization are only granted to the Jew with restrictions, even when the poor fellow is born in Russian territory. We also know that the majority of German physicians belong to the Jewish confession. This is the cause of the attitude of certain well-defined medical groups, inspired by Jewish agitators. In your own America we note that the Semitic question is now being agitated, as yet only on the surface, *pro* and *con.* The New York *Medical Record* repeats the moans of some of its always groaning Parisian *confrères*, and mentions medical practice on the East Side, the invasion of the Feldacherer or *Felshurr*, as he is called in Yiddish jargon, *Sholem Alechem Sholem!* The editor might turn his face further eastward and weep at the true place of weeping. Then your Dr. Robinson appears in the same *Record.* Robinson is evidently bidding for Jewish consultation business, but we fear Jacob will wink his off eye and judge Robinson's remarks from a true business stand-point. "My opinion," says Robinson, and Robinson's opinion, like Smith's and Jones's, in America, amounts to a great deal, if one is to judge by city directories. "My opinion," says Robinson, "is that the members of the profession should have, collectively or individually, nothing to do with a country where primary and superior instruction is in the hands of Constantin Pobyednoseff, that narrow-minded and bigoted minister, who sends his victims to die in the mines and prisons of Siberia,—a country in which all students are watched and spied on as if condemned; a country in which the most brilliant professors are treated as lackeys, exiled on the simple caprice of an autocrat; a country whose citizens see their schools and liberal colleges closed on those citizens who are Jews," etc. These are brave words from the mouth of Robinson, shouted out in New York and not at Moscow. Every one will agree with Robinson that Russia is not a liberal country, and that a majority of Robinson's statements are correct. That the Czar organizes his government on a more or less liberal basis is his own affair. French physicians will go in large numbers to this convention, even if the Czar's *new physician* is a Jew, and the majority of his German professors of Jewish extraction. The Jew is amply able to take care of himself, without the aid of the Smiths, Browns, and Robinsons, who so deeply sympathize with him,—too often for more selfish purposes.

After all, the difference between the Gentile and Jew is only one of foreskin. Mankind is alike, from one end of creation to the other, and religion is all that keeps the world apart.—*Lancet-Clinic.*

Some Points in the Treatment of Children's Diseases.

Edward P. Davis, M.D., in the *Philadelphia Polyclinic*, says, Barley water is prepared by adding one tablespoonful of barley grains to one pint of scalding hot water, allowing it to stand and then straining; it is a valuable addition to the diet, exerting an astringent action on the bowel in case of diarrhœa.

Oatmeal water is prepared by the addition of one tablespoonful of oatmeal to a pint of scalding water, allowing it to stand; strained and administered, exerts a laxative action.

If the child vomits, is feverish, and has frequent stools, the milk should be stopped altogether for twenty-four to thirty-six hours and albumen water substituted.

Albumen water is prepared by adding the white of one raw egg to eight ounces of water; in addition, the child should get light chicken or mutton broths or freshly-extracted beef juice.

Brandy and water form a good stimulant, and may be administered in ten-drop doses six or eight times a day. The administration of a dose of castor oil, guarded by some brandy to prevent griping, is of exceeding value to clean out the irritating material from the intestines. Lavage of the intestines is of first importance in intestinal infantile disorders. It is usually accomplished by the use of a No. 11 or 12 soft rubber catheter and a fountain syringe with one or two quarts of warm water. The best result is obtained if the infant is placed on its abdomen across the nurse's knee, the water being at a temperature of 100° F., and a little soda or salt added to it. Great relief is obtained from the evacuation of the flatus and fæces. In chronic cases some antiseptic and astringent must be added to the water, thus:

Boric acid, ½ ounce to the quart.
Creolin, 30 drops to the quart.
Sodium salicylate, 10 grains to the quart.
Thymol, 1 part in 2000.
Mercuric chloride, 1 part in 10,000.

The use of the solution of mercuric chloride should be followed by irrigation with warm water; this irrigation of the intestines not only removes the flatus and fæces, but exerts a stimulant action of the bowel.—*Lancet-Clinic.*

Cosmetic Surgery.

Operations and procedures designed and undertaken for the purpose of producing cosmetic effects have long occupied a legitimate place in surgery. But so far the effect has been to improve the appearance of parts which are seen. Within the past month, however, a cosmetic operation has been introduced in relation to a part which is not usually exposed to public view. The region of the body to which we allude is the abdomen. Küster, of Breslau, in order to avoid endowing patients with an unpleasant scar, has devised the method of making a transverse incision through the skin and subcutaneous tissue along a course corresponding to the natural fold of the skin, more or less distinctly marked, which occurs at about the upper limit of the growth of pubic hair in women. The superficial incision is well retracted, and the structures through which it has been made are dissected up from the muscular layer upward and downward to a sufficient distance to admit of the ordinary median incision through the deep portion of the abdominal wall. Afterwards, in addition to the deep suture, the transverse incision is sutured with silkworm-gut, and if primary union takes place the linear cicatrix is rendered almost invisible by the pubic hairs, and by the fact that it lies in the natural fold of the skin, above alluded to. This procedure, however, appears to savor somewhat of the transcendental, if its only object is that of avoiding a central linear scar as seen after laparotomy. It is difficult to comprehend how an abdominal scar could, in a cosmetic sense, be detrimental to any one, the skin of the abdomen belonging to that region of the body which usually does not come under the public gaze. Women who have borne children might just as well quarrel with Nature for permitting the linear cicatrices to develop upon the abdominal wall as the result of childbearing.—*Medical Press and Circular.*

Ray to the Rescue.

An English lady in making a cake lost her diamond ring in the dough, but did not discover the loss until the baking was complete. Rather than sacrifice her production or run the risk of having a guest swallow the ring, she sent the cake to an x-ray studio. The ring being located by the shadowgraph without spoiling the form of the cake, extraction was readily accomplished.

Non-Blistering Mustard Plaster.

According to Fiebert, a mustard plaster made according to the following directions will not blister the most sensitive skin: Two teaspoonfuls of mustard, two of flour, two of ground ginger. Do not mix too dry. Place between two pieces of old muslin and apply. If it burns too much at first, lay an extra piece of muslin between it and the skin; as the skin becomes accustomed to the heat, take the extra piece of muslin away.—*West. Drug.*

Flavoring Breast-Milk.

Administering to the mother the volatile oils, such as anise, nutmeg, etc., by imparting a pleasant flavor to the breast-milk, will sometimes cause the child to suck more eagerly and vigorously, and thus by reflex irritation of the nipples serve to increase the flow of milk which is becoming scanty.

THE
ANNALS OF HYGIENE
PHILADELPHIA VOL. XII NO. 7

COMMUNICATIONS.

Breathing and Bicycling.

Read before the Medical Association of Central New York.

By John O. Roe, M.D, Rochester, N Y.

THE function of respiration is one of the most important, if not the most important, of the vital functions over which man in any degree has control. It is, therefore, the one that is most easily and most frequently perverted by pernicious habits.

The subject of faulty breathing, however, is not a new one, and its ill effects are clearly recognized by those who have given the matter attention. Those who do not understand its importance, we, as medical men, should instruct, and as Sidney Smith has well said in regard to any new discovery, "say it so long and so loud as to compel mankind to hear us."

Mouth-breathing in every instance is followed sooner or later by more or less ill effects, but these ill effects are much sooner produced when the person participates in active exercise, which greatly accelerates the action of the heart and lungs, than when in a quiescent condition; and in no athletic exercise are great demands more frequently made on these organs, and the ill effects of mouth-breathing more pronounced than in bicycling.

This observation is made from the large number of persons who as patients have complained to the writer of the distress which they experience from dryness and irritability of the throat while riding their wheel, caused by mouth-breathing, necessitated by obstructed nostrils. Two of this number were physicians, and one a D.D.S., who were obliged to limit their use of the wheel on this account.

The normal capacity of the nasal passages for the transmission of air is equal to that of the larynx when widely opened. Therefore, provided there are no obstructions in the naso-pharynx and fauces, such as adenoid growths or enlarged tonsils, there should be no necessity for opening the mouth to breathe during active exercise.

The capacity of somewhat contracted nasal passages may be, during the ordinary habits of life, adequate for the transmission of sufficient air for the perfect aeration of the blood; but during active physical exercise the worn-out material of the tissue is so greatly increased, that an unusually large amount of oxygen is required in order fully to oxygenize this effete material which is taken up by the blood. Therefore, if sufficient air cannot pass through the nasal passages for the proper oxygenation of the blood, it necessarily must find ingress through the only other avenue left—the mouth.

In such cases, then, the greater the amount of air breathed the greater is the amount which of necessity passes through the mouth. Thus in a short time the habit of mouth-breathing is acquired, and sooner or later the person will be found nearly all the time, particularly when asleep, breathing through the mouth. The nose, like a disused roadway which soon grows up with weeds and bushes, becomes still further occluded by thickened and engorged tissues, from lack of proper use.

Man was intended to be a nose-breather only. This was clearly shown by the functions which the nose performs during respiration. It is also shown by the fact that the first inspiration of the new-born babe is through the nostrils; and if these passages are closed the breathing is very greatly embarrassed, even though the mouth be opened. Cases are known of new-born infants suffocating because the nostrils were occluded. That the air enters the nostrils before it reaches the lungs was shown by Cassels. He demonstrated this fact by cases in which he found air in the tympanic cavities of still-born children when no air could be found in the lung tissue.

Not only is man a nose-breather, but also the lower animals—many of them by necessity, as they are not provided with communication between the mouth and the respiratory passages. This we find to be the case with the solipeds.

There are several important functions which the nose performs in fitting the air for respiration. These are: (1) it serves the purpose of a filter for arresting foreign substances, such as dust and germs; (2) it imparts moisture to the air; and (3) it modifies the temperature of the air, adapting it for respiration.

(1) That the nose performs the functions of a filter is very clearly shown by the large amount of dust and othr foreign substances found in the secretions when the person has been inhaling air laden with these substances. It is also shown by the large number of germs deposited in the nose and not found in the air passages below, when the air is respired through the nasal passages. St. Clair Thompson and Hewlett, of London, have shown by their researches that at least 1500 micro-organisms are inspired every hour, while the number in the average London atmosphere sometimes rises to 14,000. As has been shown by Tyndall, Gunning, Strauss and Dubreuil, the expired air is, nevertheless, practically free from them. In the experiments of Strauss, of 600 microbes contained in the air inhaled, a single one only was expired. Litster has observed, in connection with the treatment of pneumo-thorax, that micro-organisms inhaled do not reach the air cells, or the pleural cavity, if inflated with air which has found its way through a wounded lung, while Hildebrandt shows by his experiments that they are arrested in the nasal passages. This is also confirmed by St. Clair Thompson and Hewlett, by the examination of the tracheal mucus from recently killed animals, which is always found sterile. Furthermore, these organisms are mainly arrested in the anterior portion of the nose, since the vibrissae of the vestibule are found swarming with them, while the deeper portions of the nose are comparatively free from them.

The scarcity of micro-organisms in the deeper portions of the nose is also shown by St. Clair Thompson and Hewlett to be due first, to the active expulsive power of the ciliated epithelium of the mucous membrane, which has the power to move particles along on its surface at the rate of 25 millimeters per minute; and, secondly, to the special properties of the nasal mucus, which renders it an unsuitable soil for the growth of micro-organisms, and hence does not favor their multiplication.

(2) It imparts moisture to the air. It is estimated by physiologists that during twenty-four hours about 5000 grains of water are taken up by the respiratory current of air in its passage through the respiratory apparatus. Now, Bosworth maintains

that the greater portion of this water is derived from the nasal passages, for the reason that the vascular tissue covering the turbinated bodies is the only tissue capable of furnishing it, and that the mucous membranes of the lower air-passages contain mucous glands only, which secrete mucus alone. Numerous experiments have been made which confirm these observations. Aschenbrodt found that each five liters of air passed from an air respirator into one nostril and out of the other took up 18 grammes of water. By computing the result for twenty-four hours we have 5000 grains of water, the amount found by other experiments in the air expired during twenty-four hours. The large amount of water is therefore imparted to the air during its passage through the nose.

The amount of water given off by this vascular tissue is furthermore controlled by the vasomotor nerves, which regulate the supply according to the varying degrees of humidity of the air respired.

(3) The modification of temperature that takes place in the nose is especially important when the person is subjected to extremes of heat and cold. Air on passing through the nose is brought very nearly to the bodily temperature, regardless of the temperature of the air before inhalation.

The heating power of the nasal passages was also ascertained by Aschenbrodt with an apparatus specially constructed for the purpose, in a manner similar to that in which he showed the amount of watery vapor imparted to the air as it passes through the nose. Air made to pass in through one nostril and out of the other, the passage to the pharynx being closed, was found, in the different experiments, to be raised to a comparatively uniform temperature of from 86 to 92.3 degs. F. All these experiments regarding the moisture and heat have been confirmed by Kayser, Bloch, and Greville MacDonald. The latter also showed that air at an exceedingly high temperature, as at 140 deg., is reduced to the uniform temperature of 92 deg. on passing through the nose alone.

With a knowledge of the important functions which the nose performs in purifying and modifying the air fitting it for respiration, the injurious effects of mouth-breathing upon the throat and lungs can very readily be understood. Air passing directly to the lungs through the mouth has no filter by which the dust and germs are removed, nor is the air modified by having moisture and warmth imparted to it. In consequence of this, dryness of the pharynx is soon produced and the intractable disease termed pharyngitis sicca is engendered. The larynx become irritated, hoarseness and coughs are induced thereby, and a general catarrh of the throat and bronchi is caused. These conditions, extending into the deeper air-passages, soon produce an excellent feeding-ground for bacilli to develop, and consumption is not the infrequent result.

Moreover, mouth-breathing gives a peculiarly vacant expression to the countenance and the open mouth of the mouth-breather is so conspicuous that already it has come to be recognized by the laity and commented upon by the press as the "bicycle mouth," owing to the frequency with which it is seen among bicyclists.

These evil effects of mouth-breathing are not, however, confined to cyclists, but it is equally injurious to all who from carelessness or from necessity, by reason of the nostrils being narrowed or obstructed by diseased conditions, it becomes a habit or practice. When this condition of mouth-breathing exists, however, the inhalation of a large amount of air, which is necessitated when active exercise is participated in, as in wheeling, accentuates the ill effect of this perverted respiration, and to a great degree lessens the benefits derived from this splendid exercise. Likewise, and as the natural means of affording relief from these more or less dangerous consequences, there is emphasized the importance of giving proper attention to the nasal passages and rendering them free and unobstructed.

Respirators worn over the mouth, so often recommended a few years ago to patients suffering from throat and chest affections, have been abandoned since the functions of Nature's respirator, the nose, have been more fully uderstood.

It is also a well-known fact that the endurance of athletes or persons engaged in any active exercise, other things being equal, is proportionate to the freedom of respiration through the nose and the proper oxygenation of the blood.

The reason that we direct our warning especially to cyclists is that cycling is so nearly universal at the present time as to render it the principal mode by which exercise is taken, and, therefore, the ill effects of mouth-breathing are most often noticed among wheelmen. It is estimated that four hundred thousand in Great Britain and over a million in this country participate in cycling.

The larger the number, the more urgent becomes our duty to warn them of the evil consequences of mouth-breathing, and to teach them the importance of obeying Catlin's injunction, "Shut your mouth and save your life!"

Food Adulteration and the Pure Food Law.

Abstract of a Lecture delivered before the Franklin Institute, Philadelphia, February 5, 1897.—*The Journal*, April, 1897.

By Dr. Lee K. Fremkel, Member of the Institute.

IT will probably come as a surprise to many, that the tendency existing among manufacturers and dealers to-day, to produce and sell articles of food which are either below standard, or different from what they are represented to be, is not an insignificant fact, but a condition which has developed remarkably within the past decade. If it be remembered, furthermore, that in a number of instances, the adulteration which is practiced is not only fraudulent, but at the same time also a menace to the health of the consumer, it will be seen that the condition which confronts us contains the elements to create a justifiable alarm.

The cause of this remarkable state of affairs is not difficult to trace. It must be sought in the fierce competition which is so prominent to-day in all classes of trade; in the tendency of the masses to buy that which is cheap rather than that which is good; in the inability of the poor to purchase pure food at the price which is demanded for it; and lastly, in the ignorance which renders the consumer unable to discriminate between what is wholesome and what is injurious.

The extent to which food adulteration is carried in the United States is a matter of doubt. The estimates of competent authorities on the subject vary between 2 to 15 per cent. There can hardly be any question that the first figure is too low. The last is given by Mr. Wedderburn, the special agent of the Department of Agriculture, who has examined the subject very exhaustively. Good judges estimate the value of the food supply of the United States at a minimum of $4,500,000,000 annually. If we take the very conservative estimate of 2 per cent., the loss to the consumer by adulteration amounts to $90,000,000 per year. Dr. McNeal, of Ohio, estimates the annual loss to the people of the United States at one and one-third billion dollars; and to the State of Ohio, as the result of three years' investigation, a loss $78,000,000 annually, or $232,000 per day. It is immaterial for the purpose of this lecture which of these figures is correct. Either amount is sufficiently large to prove that the actual money loss to the consumer arising from the purchase of food-stuffs other than they are represented to be, is so great as to merit attention at the hands of the individual, the State and the National Government.

Nor does it seem that the sophistication of food is confined to any particular district. The fact that nearly every State in the Union has either general or special laws regulating the sale of food, affords in itself sufficient evidence that these laws were enacted in answer to a crying need for them. Furthermore, the reports of the Commissioners, Boards of Health and other officers appointed to administer the laws in the various States, show that the falsification and adulteration are systematic and general throughout the country. What is true of the extent of adulteration, so far as territory is concerned, is equally true of the kinds of food adulterated. It would be difficult to find a single food-stuff requiring preparation to make it palatable, that has not been subjected to the skill of the sophisticator, or which, on investigation, will not, to a greater or less extent, disclose the hall-mark of fraud.

Several years ago the National Department of Agriculture, under the superintendence of its chief chemist, Dr. H. W. Wiley, instituted a series of investigations of the more common food-stuffs, such as molasses, sugar, honey, confectionery, canned goods, etc. Letters were addressed to prominent chemists in the States of Indiana, Nebraska, California, Kentucky, Massachusetts, Louisiana, Pennsylvania, Ohio and New York, with the request that they purchase samples of such articles in their respective States, examine the same and report on their condition of purity. The department at Washington at the same time conducted a similar series of tests on articles of food sold in the vicinity of the capital. The results obtained from the examination of molasses and syrup are in the main a criterion of the results found with the other articles of food examined. As a rule, each chemist analyzed fifty samples, with the following results: Indiana showed 32 samples which contained tin; of the Nebraska samples, 35, or 70 per cent., contained glucose; of the California samples, 11, or 22 per cent., contained glucose; 19, or 38 per cent., of the Kentucky samples were found to contain the same ingredient. Worthy of notice is the fact that Massachusetts, the State in which the food laws have been most rigidly enforced, show the smallest percentage of adulteration, only 8 of the samples, or 16 per cent., containing glucose; Louisana, the headquarters of the molasses industry, gave 16 samples adulterated, or 32 per cent.; Pennsylvania's report does not redound to her credit, as 31 samples, or 62 per cent., contained glucose; of the samples examined in Washington, of which 25 were bought in Washington and 32 in Baltimore, 14 of the Washington samples and 13 of those from Baltimore contained glucose. Furthermore, 32 of the samples contained tin and 19 copper. The samples examined in these ten sets represent the greater number of the producers to be found in the United States, and probably no better illustration could be given of the extent of food adulteration than is represented by these few figures.

The character of food adulteration goes hand-in-hand with the extent of the adulteration and the kinds of food adulterated. It is simply astounding to what extremes the rapacity and ignorance of the producer have led him in order to increase his profits. Were the adulteration entirely of such a nature that the consumer's pocket-book only was injured, it is possible that extenuating circumstances for such fraud might be found, and the offense in a measure condoned. But when substances are added to our foods which are known to have harmful effects on the human organism; when the adulteration consists of the addition of drugs and chemicals which, when taken into the system, are known to be cumulative poisons—and it has been repeatedly shown that such adulteration is practiced—then we can only pray that the world at large may soon be educated up to the standard of seeing that it must, for its own protection, stamp out this evil of adulteration with every force that it can exert.

To bring this matter more clearly before you, let us leave generalities and consider in detail some of the adulterations that have been and are being practiced to-day on the more common articles of food. Of these probably none are so important as the two in daily use by all classes of people of all ages, viz.:

MILK AND BUTTER.

The chief adulterant of milk, an adulterant most plentifully found, and one having the special advantage of cheapness, is water. Formerly, the addition of flour and starch to milk was occasionally attempted, but it is not probable that such sophistication exists to-day in other than isolated cases. In the last few years, the tendency to add preservatives to milk has grown quite common. In fact, so prevalent has this practice become, that many State Legislatures have made it a subject for legislative action, and in Pennsylvania we have a special enactment whereby it is a misdemeanor to add to milk, borocic acid salts, boracic acid, salicylic acid, salicylate of soda or any other acid, drug, compound or substance. Legislation against the addition of water is likewise general throughout the States, and special enactments, defining explicitly what shall constitute pure milk, are the rule rather than the exception. In Pennsylvania, for example, standard milk must contain 12½ per cent. of milk solids, 3 per cent. of fat, and must have a specific gravity ranging between 1.029 and 1.033 at 60° F. Under adulterated milk, there is included also milk obtained from diseased cows or from cows fed on putrid substances, the selling of such milk being a misdemeanor and punishable.

The adulteration of butter is of so peculiar a kind and has such widespread significance, that the legislation on the subject has been undertaken not only by State Legislatures, but by Congress as well. We may leave out of consideration adulteration by preservatives, such as we met under milk, since what is true of milk in this instance is likewise true of butter. Of far greater importance is the adulteration or substitution of butter, the product of milk, by the artificial product obtained from animal or vegetable fats, and know as oleomargarine, margarine, butterine, etc.

It is not within the province of this lecture to discuss either pro or con, the question of the value of oleomargarine and similar products as food-stuffs. Much has been said and even more has been written on this topic, and I believe that I am safe in saying that to-day even experts are undecided. Whether milk fats are more digestible than animal fats, whether the germs which may remain in oleomargarine at the low temperature at which it is produced, are more pathogenic in their nature than those which find a habitat in the cow-yard and in the stable, are not questions for us to decide. Our interest in the matter begins when there is sold, as pure butter, any oleaginous substance or any compound of the same other than that produced from unadulterated milk, or cream from the same; and here, too, our interest virtually ends. Until it is definitely proven that oleomargarine and similar products are injurious to the human organism, their sale, when sold as such, does not come under the scope of food adulteration. This fact has been taken cognizance of in our national legislation. The United States allows the sale of oleomargarine and its allies, when the seller is properly liecnsed and when the special laws as to branding, marking, etc., are fulfilled.

The State of Pennsylvania, however, has taken an extreme stand in the matter. By an Act of Legislature, it is a misdemeanor for any person, firm or corporate body to manufacture, sell, or offer for sale, or have in his, her or their possession, with the intent to sell the same as an article of food, any article made out of any oleaginous substance, or any compound of the same other than that produced from unadulterated milk or cream from the same, or any article designed to take the place of butter or cheese produced from pure unadulterated milk or cream from the same, or of any imitation or adulterated butter or cheese. By this law, oleomargarine and similar products, and what is known as filled cheese, vis.: cheese to which animal or vegetable fats have been added, are completely excluded from Pennsylvania.

If we examine more closely, however, we shall find that the true inwardness of this law has nothing to do with food adulteration. Below and beneath the verbiage of the enactment is the fact that the law was framed not necessarily to insure wholesome food, but to protect the large and still growing dairy industry of the State. Statistics have shown that the products of butter and cheese in the United States amounted, in 1889, to $245,000,000, or $39,000,000 more than the product of all of the gold, silver and iron mines in America. The State of Pennsylvania produces annually 100,000,000 pounds of butter, so that every individual who owns even a single cow—and of these there are many—is directly affected by the dairy question. Opposed to this is the fact that the entire oleomargarine industry is in the hands of less than twenty-five men. I believe this statement indicates with sufficient clearness that the true tenor of the law was the protection of a large number of the residents of Pennsylvania against the supposed encroachment of a few outsiders. Whether this is within the province of the State is for others to decide. It does not come within the province of this lecture.

Next in importance to the products of the dairy are those of our cereals and leguminous plants.

THE STARCHES AND VARIETIES OF FLOUR.

Fortunately for us, adulteration among these products is the exception rather than the rule, particularly in the United States. What adulteration there is consists mainly in the partial substitution of one flour or starch by another. In wheat flour, for example, in the few cases that have been reported, the adulteration consisted of damaged peas, ground rice, corn meal, and rarely the addition of alum, to increase the whiteness. Under adulteration must also be considered musty flour and flour containing dirt and smut. Buckwheat is adulterated with wheat and other flours; sago with potato starch.

With the products of flour, such as bread, buns, cake, macaroni, vermicelli, etc., the adulteration, while more frequent, is likewise not very pronounced. Bread is said to adulterated with alum, sulphate of copper, ammonia, flours other than wheat and inferior grade of flour. It is questionable if these adulterations are practiced to any extent in the United States. In England and on the Continent a number of cases are on record, in which the above adulterations were found and the offenders prosecuted.

Where coloring principles are a desideratum, the adulteration of bread, cake, etc., while not frequent, has been very marked. Possibly all of my hearers may remember the flagrant adulteration of buns and noodles with chrome yellow which was brought so prominently to the notice of the Philadelphia community several years ago. Dr. Henry Leffmann at that time found 8 grains of lead chromate in a pound of a sample of soup noodles, placed there to give an imitation egg color, and 2 grains of the same poison in each of the tea buns tested by him. Seventy-eight cases of lead-poisoning were reported by Dr. Stewart from eating chrome yellow pound buns, sixty-four of which were directly traced to the use of chrome yellow by two bakers, in the family of one of whom six deaths occurred, and he himself was made seriously ill. Besides this coloring, macaroni has been found to contain saffron, tumeric (which is considered injurious to health), and Martin's yellow, which is poisonous. In vermicelli, pipe-clay and kaolin have been found as adulterating constituents.

In connection with the baking of bread, cakes, etc., and the presence of alum in bread, the question of alum in baking powders is of extreme importance. Alum is added to bad or slightly damaged flour by both the miller and the baker. Its action, according to Liebig, is to render insoluble the gluten, which has been made soluble by acetic or lactic acids developed in damp flour. Hence, it stops the undue conversion of starch into dextrine or sugar. It has been a popular belief for many years that the presence of alum in baking powder acts injuriously on the human system. This belief is even held by the medical profession, and has been strengthened by the advertisements of certain baking powders which contain other substances, dwelling upon the injurious effects of alum. In contrast to these, Dr. Blyth, the English authority on foods, states that it is a question whether in the moderate doses in which alum is taken in pastry, or bread or cake, the flour of which has been mixed with alum or alum baking powder, it has the slightest appreciable influence on health. He states that he has used it in his family for years without injury, and concludes by declaring that he is decidedly of the opinion that alum in food, in reasonable quantities, is not injurious to health. Mr. C. A. Crampton, the assistant chemist of the Department of Agriculture at Washington, who has made an exhaustive investigation of baking powders, states: "Whether the absorption of small quantities of alum into the human system would be productive of serious effects is still an open question, and one that careful physiological experiment alone can decide." Finally, Mr. Levi Wells, Dairy and Food Commissioner of Pennsylvania, in his report for 1896, which has just been published, states: "A careful study of the question leads to the conclusion that a properly compounded alum powder will perform all the desired requirements, and is no more harmful than the powders costing four or five times as much." How little weight Mr. Wells places upon the injurious properties of alum salts is shown by his recent decision on the pickle question. In this decision, Mr. Wells states that the use of "alum in pickles is not prohibited. It does not injuriously affect the same, but is added to improve the appearance and quality."

SPICES AND CONDIMENTS.

The various spices and condiments offer a very fertile field for adulteration, in that they come into the market mainly in a very finely divided form. No better example of the extent of such adulteration could be given than the bare statement of the list of adulterants that have been found in the more common spices. Nor are these isolated cases. In the samples examined, and they run into the hundreds, the adulteration is fully 75 per cent. For example, in black pepper there have been found buckwheat flour and ground hulls, cracker crumbs, Indian meal, wheat flour, charcoal, sand, bran, linseed meal, cocoanut shells, mustard husks, sawdust, ground olive stones, cayenne pepper, red clay and ship's bread. General B. F. Butler has alleged that the pepper used to cure hides sent from South America to this country is washed, dried and sold as pure pepper. Mr. Wedderburn, in commenting upon this statement, aptly says: "One can imagine how he would like salt from spoiled fish or decomposed meat. This class of pepper is no better."

In cayenne pepper there have been found red lead, ground rice, flour, salt, cracker dust, Indian meal, ship biscuit, etc. Cloves contain arrowroot, along with other substances. Cinnamon is adulterated with spent bark, gypsum, rice hulls, tumeric, browned bread and crackers. Ginger contains tumeric, cayenne pepper, mustard, inferior and refuse ginger. Of all the spices and condiments, however, mustard is king, so far as adulteration is concerned. The substances reported as having been found in it include ground yellow cakes, flour, cayenne pepper, chrome yellow, Martin's yellow, gypsum, tumeric, mustard cake colored with tumeric, diluted with starch; wheat and rice flour, weighted with terra alba. Whole mustard contains clover seed, turnip seed and other vegetable seeds.

As regards spices, Philadelphia occupies a rather unenviable position. In 1890, Mr. Frank A. Hennesy reported that there existed in Philadelphia an industry of no small magnitude for the production of articles know to the trade as "spice mixtures;" that these were being made in a large steam bakery in Philadelphia, out of a grade of wheat lower than middlings. The process consisted in baking dough made from this wheat in the shape of biscuits and colored to meet the demands of the special spice it was intended to imitate. For the yellow of mustard, tumeric was used; for brown, the latter with Spanish brown; for black, charcoal. These biscuits were sold to the spice dealers, who "transformed" them into spices.

TEA, COFFEE AND COCOA.

Tea, coffee and cocoa are frequently subjected to adulteration, although since the enforcement of the United States tea adulteration law (1883), the sophistication of this commodity has considerbly lessened. The forms of adulteration most commonly practiced with tea are facing, the use of spent or exhausted leaves, and the introduction of foreign leaves, foreign astringents, such as catechu, and added mineral matter. The process called facing consists in treating the prepared leaves with mixtures of tumeric, indigo or plumbago to impart some favorite color or gloss to the leaf. Gypsum, soapstone, etc., are likewise used.

Coffee, too, is subjected to facing and coloring, particularly inferior or damaged coffee, for the improvement of its appearance and in imitation of superior grades. For this purpose there have been used yellow ochre, Silesian blue, chrome yellow, burnt umber, Venetian red, drop black, charcoal, French black, glycerine, palm oil, indigo, coal, clay, ultramarine and gypsum. More important is the substitution of coffee by the prepared root of the chicory plant, "mangold-wurzel," peas, beans and saw-dust, various kinds of seeds, cocoa husks, and in particular what is called in Germany, "Kunst Kaffee," or artificial coffee. Within the past few years, our markets have been flooded with these imitation coffees, which are composed in the main of bran, starch, flour, sugar and similar ingredients. Many of these substitutes come from abroad, but American ingenuity has likewise invented machines which enable the manufacturers of spurious coffee to turn out products so closely resembling pure coffee in appearance that its detection with the eye is difficult. Not only has ground and roasted coffee been thus imitated, but even artificial green coffee is on the market, and so close is the imitation that only experts can tell the difference. In 1891, the Philadelphia Times brought to the attention of its readers the extent to which this fraud was practiced. It showed that immense quantities of what was known as "Java coffee compound" had been distributed throughout Philadelphia and New Jersey, and that the office of one of the manufacturers was within a block of the City Hall.

Cocoa is frequently and systematically adulterated, since it offers conditions so favorable for profitable adulteration. Mr. Spencer states that "there is probably no more misleading or abused term in the English language than the term "soluble cocoa.' No cocoa on the market contains a very considerable percentage of matter soluble in water, unless the material so dissolved is foreign soluble material that has been added during the process of preparation." The most common form of cocoa adulteration is the extraction of the fat. It is claimed by some manufacturers that this is necessary in order to make the cocoa more readily digestible. Whether this is the case or not, the public should be made cognizant of the amount of fat which any special cocoa preparation contains. It is impossible within the limits of this lecture to go more fully into the details of the adulteration of these three articles. The index alone to the literature of the subject covers many pages, and each article could by itself consume the time of a lecture without exhausting the subject.

LARD AND OLIVE OIL.

Of great importance to us as food-stuffs are two articles, lard and olive oil. The character of the adulteration practised with these two substances is somewhat limited; the extent of the adulteration seems to know no bounds. With both lard and olive oil, the usual form of falsification is the substitution of the oils and fats which occur in them, by other vegetable or animal oils and fats, in particular by cotton-seed oil. Besides this general adulterant, olive oil has a special adulterant in peanut oil, while lard contains the stearines and oleo-stearines obtained from beef and sheep fats. Finally, to cap the climax, it has been found that water to the extent of 20 per cent. may be worked in with lard, without causing any appreciable difference in its appearance, if an alkali such as carbonate of soda be added at the same time. The extent to which this last adulteration is practised is probably much larger than is generally supposed. The use of cotton-seed oil for the adulteration of both lard and olive oil has grown into a very extensive industry, and it is probable that 75 per cent. of the oil sold as olive oil, salad oil, etc., contains cotton-seed oil to a greater or less extent. Furthermore, it has been definitely proven that cotton-seed oil is shipped from this country to Europe, in bulk, there used to adulterate olive oil, and then returned to these shores labelled as a pure product of the olive.

MOLASSES, SYRUP, HONEY, CONFECTIONERY.

The adulteration of molasses and syrup has already been considered in the foregoing, where it was shown that the bulk of the samples examined contained glucose, or tin salts. These latter are added for the purpose of bleaching the molasses, and are highly objectionable on account of their poisonous properties. Sulphites and hyposulphites are likewise added for a similar purpose, and are very frequently found in the light-colored New Orleans molasses which comes into our markets. Sugar is an article of food that is rarely adulterated by added matter. Occasional samples show the presence of starch or of minute quantities of ultramarine which has been added to improve the color. Several years ago an attempt was made to adulterate cane sugar with sugar made from corn starch, but owing to the sticky properties of the latter, the method had to be abandoned. Of low grade sugars, water is the chief adulterant. The modern methods of sugar boiling permit of the introduction of considerable quantities of water without any appreciable difference in the appearance of the sugar.

Honey, like the other food-stuffs that have been mentioned, is frequently adulterated. This is true, however, only of strained honey or of comb honey packed in glass jars, it being almost impossible to adulterate honey that is sold wholly in the comb. When sold as strained honey, or as comb honey in glass vessels, the adulteration practiced is of the most glaring kind. The cases are frequent where the honey has been separated from the comb, the latter placed in vessels, covered with glucose, and the mixture then sold as pure comb honey. A thick syrup of cane sugar is also used to adulterate honey, but owing to the tendency which it has to crystalize, it can be used in small quantities only.

It is difficult to say what constitutes adulteration in candy, there being no fixed standard for its composition. The usual conception of candy is a compound made up of saccharine matter, flavoring, and either with or without coloring matter. So long as any of these ingredients are not injurious to health, it can hardly be said that candy is adulterated. The cheaper grades of candy contain, as a rule, commercial glucose instead of cane sugar, starch and a gum, such as gum tragacanth. Occasionally terra-alba and injurious coloring matter obtained from coal tar have been found, but, as a rule, the principal coloring consists of an organic dye which has no harmful properties. The following is a partial list of the substances found in 250 samples of candy examined by the National Department of Agriculture:

Sucrose, dextrose, maltose, dextrine, starch, gum, gelatine, grease, flour, copper, mineral colors, cochineal, eosin, corallin, Bengal red, fluorescin, ultramarine, turmeric, methyl orange, carmine, lampblack, Victoria yellow, magenta, orange red, aniline brown and Bismarck brown.

CANNED VEGETABLES, CATSUP, JELLIES, ETC.

Under one heading we may consider several groups of foodstuffs, which, while different in composition, are alike in the form of adulteration which is resorted to. These groups include the varieties of canned vegetables, fruit butters, jellies, preserves and catsups. The forms of adulterations, common to all of these, consist in the use of coloring matter, of imperfect vegetables or fruits, of other fruits and vegetables than those called for, of preservatives. In the case of canned vegetables, there is an accidental adulteration from the ingredients of the can, such as lead and tin, and which may, as a rule, be attributed to a lack of care in canning.

In all of the groups mentioned the adulteration practiced is of the most flagrant and extensive kind. Catsups are made of skins and cores instead of the pure vegetables, then colored with a coal-tar product and loaded with salicylic acid to prevent fermentation. Fruit butters are nothing but parings and scrapings of fruit, to which glucose, starch and coloring have been added, with salicylic acid as a preservative. Jellies are made from glucose, flavored with essential oils and colored, to which salicylic acid is added. Some fruit jellies marked as pure have never seen a trace of fruit. What is true of jellies is true of preserves. Put together refuse material, the cheapest sort of glucose, some coloring and salicylic acid, and you have the composition of some of the cheaper forms of preserves that are to be found on the shelves of some of our grocery stores. Of these coarser forms of adulterations it will be unnecessary to say even a word. They are universally recognized as unfit to be used, and every honest dealer is of the opinion that the sooner they are driven out of the market the better it will be for trade. Two special forms of what have been and still are considered adulterations, cannot be so lightly passed over. These are the use of copper salts for greening vegetables, such as peas, and the very extensive use of salicylic acid and allied products for the preservation of the vast bulk of the articles of food above mentioned.

Regarding the greening of peas by copper salts, the last word has probably been said. At a conference between the officials of the State and a committee representing the Retail Grocers' Association of Philadelphia, held at Harrisburg, on April 15, 1896, Mr. Finley Acker, of Philadelphia, delivered an address on "Colored French Peas," in which he showed, to the satisfaction of every one present, that the addition of copper salts to peas, in the amount ordinarily used, could exert absolutely no injurious influence on the system.

Mr. Acker showed in detail that during the past forty years, hundreds of millions of cans of French vegetables had been eaten, and that in the entire time there had never been a single well-authenticated instance of poisoning that could be definitely traced to the minute quantity of copper used in preserving. He further showed that copper occurred naturally in bread, wheat, oats and other cereals, meat, wines, water, in the blood and in the organs of man, in quantities at times larger than are found in the peas under discussion. In his address he quoted as conclusive testimony, the investigations of eminent chemists, who subjected themselves and their entire families to a systematic diet of copper salts in their food for a period of years withont noticing any injurious effects in the entire time.

As a result of the conference, Mr. Wells handed down his decision that all the department would require on French vegetables would be the distinct labelling "artificially colored," whenever coloring matter is used. This ruling has since been extended to include all canned vegetables, whether imported or domestic.

While, therefore, to-day there is a consensus of opinion regarding the non-injurious effect of copper salts when used in vegetables in judicious amounts, an entirely different view is held regarding the use of salicylic acid, benzoic acid, boracic acid and similar drugs as food preservatives. Notwithstanding the protests of some manufacturers that it is impossible for them to properly prepare their products without the use of such preservatives, it has always been the case that canned vegetables, etc., in good condition and free from added preservative, can be obtained if they are desired. Investigation has furthermore shown that, in many cases, the preservative has been added not to protect good food, but to improve that which is already decomposed and tainted.

There can be hardly any doubt in the mind of the discerning individual, after the conclusive and exhaustive researches that have been made, that the use of preservatives such as have been mentioned, and of salicylic acid in particular, in any quantiiy whatsoever, should be positively prohibited. More stress is laid upon salicylic acid than upon the others, since this is more commonly used. A single druggist in Columbus, O., reported that he had sold in one season more than 500 ounces of the drug. which he felt confident had been used for the preservationof food.

It is well known to-day that salicylic acid is a powerful antiseptic. As such it retards the action of organized ferments like the yeast plant and putrefactive bacteria. It hinders and prevents fermentation, the souring of milk and the putrefaction of milk. Its action upon unorganized ferments is even more powerful. It completely arrests the conversion of starch into grape sugar by disease and pancreatic extracts. This action is directly opposed to the process of digestion. and were there no other reason, the use of salicylic acid should be universally concondemmed. These facts in connection with salicylic acid have been recognized very thoroughly in legislation. The use of the acid has been condemned by most of the European countries having pure food laws. In France it is forbidden by law. In Austria, Italy and Spain it cannot be used without the danger of incurring a heavy penalty, and all South American States having pure food laws have absolutely forbidden its sale. The laws of many of the States forbid its use. By a decision of Mr. Wells, the Dairy and Food Commissioner, the use of salicylic acid in foods is prohibited in Pennsylvania.

I wish to call attention here to another fact in connection with the use of salicylic acid, which is of extreme importance, viz: the sale of preservalines, preservatives, etc., under various high sounding names, intended for use in private families. A number of these, claimed to be perfectly harmless. are on the market. but actually contain salicylic acid as the main indredient. The conscientious and careful housekeeper should put an absolute veto upon the use of any such compound. There is rarely any need for them, since when pure fruits and vegetables are used, and the proper directions for sterilizing by heat, etc., are carried out, canned or preserved goods of all descriptions can be prepared that will remain in good condition for years without the aid of any preservative.

Of the more common food-stuffs still to be considered, are:

VINEGAR, BEER AND WINE.

All three of these are extensively adulterated. With vinegar, the main form of adulteration is the addition of water and the consequent lessening of the acidity and of the total solids which a standard vinegar contains.

(TO BE CONTINUED.)

The Country Doctor.

There's a gathering in the village that has never been outdone
Since the soldiers took their muskets to the war of sixty-one.
And a lot of lumber wagons near the church upon the hill,
And a crowd of country people Sunday dressed and very still.
Now each window is pre-empted by a dozen heads or more,
Now the spacious pews are crowded from the pulpit to the door,
For with coverlet of blackness on his portly figure spread
Lies the grim old country doctor on a massive oaken bed ;
Lies the fierce old country doctor,
Lies the kind old country doctor,
Whom the populace consider with a mingled love and dread.

Maybe half the congregation, now of great or little worth,
Found this watcher waiting for them when they came upon the earth.
This undecorated soldier of a hard, unequal strife
Fought in many stubborn battles with the foes that sought their life.
In the night-time or the day-time he would rally brave and well,
Though the summer lark was fifing or the frozen lances fell,
Knowing if he won the battle they would praise their Maker's name,
Knowing if he lost the battle then the doctor was to blame.
'Twas the brave old virtuous doctor,
'Twas the good old faulty doctor,
'Twas the faithful country doctor fighting stoutly all the same.

When so many pined in sickness he had stood so strongly by,
Half the people felt a notion that the doctor couldn't die.
They must slowly learn the lesson how to live from day to day
And have somehow lost their bearings, now this landsmark is away.
But perhaps it still is better that this busy life is done,
He has seen old views and patients disappearing one by one,
He has learned that death is master both of science and of art ;
He has done his duty fairly and has acted out his part.
And the strong old country doctor,
And the weak old country doctor,
Is entitled to a furlough for his brain and for his heart.

WILL CARLETON.

Quacks, in Germany, are treated in a most effective manner. Recently one of these "curers" was found guilty of selling nostrums for all diseases, and prognosticating marvellous cures. He was sentenced to four years' imprisonment, a fine of $750, and his rights of citizenship were suspended for five years. If we had such laws in this country to deal with this class of "humbugs," it might serve to protect both the community at large and the profession.—Am. Medico-Surgical Bulletin.

The Mouths of Our School Children.

Read before the Tri-State Medical Society in session at St. Louis, April 7, 1897.

By CARL THEODORE GRAMM, M. D , Chicago.

Proffesssor of Oral Surgery, College of Physicians and Surgeons, Keokuk; Attending Stomatologist, Michael Reese Hospital, St. Joseph's Hospital, United Hebrews Charities Dispensary; Lecturer on Stromatology, St. Joseph's Hospital Training School for Nurses, etc., etc.

I COME to you to-day with a plea for your interest in what to the youth of our land is a veritable Pandora's Box. I refer to the universal existence of malformation of the oral structures and their vulnerability, sometimes initiative and sometimes co-existing with constitutional and local disorders, and always conducive to a lower physical and mental vigor. I claim your interest in this my theme since you, as physicians, enter the sanctum sanctorum of nearly every home and are in position to be doctors indeed, that is, teachers, there, of prophylaxis. And prophylaxis with children applied to physical development and to character formation means so much to future generations, to families, and nations.

Why are there so many mouth-breathers in our school rooms, boys and girls, whose nasal secretions have become vitiated, whose unused nasal passages have become clogged with abnormal growths, very much like vacated country lanes, grown up to weeds, whose throat and lungs have become congested because of unfiltered and untempered air inhaled, whose chests have become contracted and shoulders stooping, whose physiognomies, once bright and intelligent, have altered, expressing merely weakness and stupidity; in short, whose whole physical and mental condition are makedly depressed. What is at the bottom of it? Answer—Ignorance or neglect.

Why is it that so large a percentage of our chlidren, school children, the children who come to our clinics, present features distorted, due only to untimely, injudicious loss of teeth, deciduous and permanent?

Why in this day of asepsis should we meet with cases of gastritis, innumerable, due to filthy and diseased mouths? Why so much stomatitis, so many cases of alveolar abscesses, vitiating the system of the developing child and leaving an impress upon the general connective tissues often not to be eradicated. The fact is that these conditions could be avoided by timely guidance and advice; and the pity lies in that so many human beings are allowed to become disfigured and are subjected to torture when the ounce of prevention might have secured them against future discomfort. This ounce of prevention, this timely counsel, may come most forcibly and naturally from the physician for reasons which I stated at the outset.

Wherefore this plea, that the medical profession should interest itself in what has hitherto been a somewhat disregarded field for it. It is only in recent years that oral pathology has been taught in a few medical schools; and even to-day the attendance at these lectures is not compulsory. Trained nurses, as a rule, have no conception of the care of mouths of those whom they are attending, and the overwhelming majority of mothers are lamentably indifferent and untutored in the care of their children's mouths. One of the principal points of my plea therefore is the maintenance of a chair or a lectureship in every under and post-graduate medical school teaching this specialty of medicine which cannot any more be relegated to barbers and blacksmiths. A fact due to the magnificent development of dental surgery brought about by educated, broad, brainy members of the dental profession. These, unfortunately, can serve and educate but a small number of the great public needing instructions in oral hygiene. I plead that every training school for nurses should include the subject in its course. I would plead, furthermore, that teachers in our public schools be instructed not to be content with having merely hands and faces clean. It ought not to be implied by them that only the exterior, that which shows, must be clean. Without going to extremes their ethics might be grounded more thoroughly and our children be compelled to come to school with the teeth also cleansed. The mouth is such a common receptacle for all manner of bacteria, and when neglected becomes such an excellent nidus for many that are pathogenic that cleanliness of it should be enforced wherever it may be.

This brings me to an aside, namely, that the friendly exchange of half-exhausted chewing gum on the part of children ought to be discouraged and with it, the practice of teachers, almost as bad, of distributing promiscuously pen holders and drawing pencils which had been handled and mouthed and infected by others the day before.

This was the practice in my own early youth and I learn with disgust that all the scientific advancement in practical medicine has not caused this dangerous custom to be banished.

If the medical profession awaken to the close relationship of oral neglect with general disease and in accord with stomatologist endeavor to prevent the harm arising from it cuspids will be allowed to remain as the keystones of the dental arch and facial expression. The first molar will remain to develop the lower half of the face, deciduous teeth will completely fulfill their original mission, pus absorption from dental abscesses will be a thing of the past, mouth breathers will follow Shakespeare's injunction, "shut your mouths and stretch the nostril wide." Our children will be healthier and happier.

The Study of Crime and Degeneration from a Medical Standpoint.

Read by title before the Michigan State Medical Society, at Mount Clemens.

By Willis S. Anderson, M. D., Detroit, Mich.

MY object in presenting this paper is not to offer anything distinctly new or to favor any preconceived theory; but rather to bring together certain facts from various sources and to draw such conclusions as the facts would seem to warrant.

We must assume for the purpose of our study that mental acts have a physical basis.

Since the days of Ferrier, whose experiments confirmed the works of Fritsch and Hitzig, of Berlin, the localization of brain functions has been well established. It has come gradually to be acknowledged, with the accumulated evidence derived from the study of the lower animals and man, both in health and disease, that all of our mental acts have a physical basis, in the sense that mentality is accompanied by a chemical change and a structural rearrangement of the molecules of the nerve cells. Hodges, in the study of fatigue, found an actual change in the brain cells following activity, that disappeared after a period of rest.

There are some who do not believe in this newer physiology; but the evidence derived from competent observers seems to warrant us in accepting this doctrine as the most rational explanation. It was formerly believed that our passions, such as hatred, love, fear, and the like, as well as reason, were confined to man; but the study of the works of Romanes, Lubbock, Darwin and many others, convinces us that these qualities are common to the lower animals.

It is now generally accepted that the mental acts of animals, children and adults differ not in kind but only in degree; that the same laws that govern our minds govern those of animals; and that similar chemical and molecular changes take place in the brains of both men and animals. If these facts are true, the study of crime and degeneration has a new interest; and much can be gleaned from the psychological study of animals and man.

The study of criminals and degenerates has beeen mainly along two lines: first, the somatic or bodily anomalies; second, the psychological peculiarities. Lombroso was the first scientist systematically to study the physical peculiarities of degenerates, and his tabulations of the various measurements of criminals and the insane form an interesting study.

It would seem from the study of the writing of the Italian school that abnormalities in general, and those of the head in particular, were more common in criminals than in normal individuals. The cephalic indices are greater, the prognathous jaw, and the atypical or projecting ears more common than in the normal.

The committee appointed by the British Medical Association to investigate the development and condition of the mind among school children found that ear defects were frequently associated with nerve defects and mental weakness. Dr. Langdon Down finds a resemblance between feeble-minded children and the various ethnic types of the human family, especially the Mongolian and Negroid.

However attractive statistics and measurements may be, we must not forget the importance of racial characteristics, the effect of diseases both prenatal and postnatal on the physical development of the individual. It is also important to remember that apparently normal persons may frequently have one or more of these degenerative marks. It would seem that one is justified in concluding, after taking all facts into consideration, and from the study of a large number of cases, that the criminal, the insane, the idiot, and the feeble-minded have physical anomalies oftener and more highly developed than normal individuals.

The more recent studies of criminology have been along a psychological line, rather than by the observation of the purely physical anomalies. It is as impossible to define sharply the limits between a normal and an insane or a criminal person as it is to understand accurately the difference between the diseased and the healthy action of cells.

As Max Nordau says: "The difference between disease and health is not one of kind, but of quality. There is only one kind of vital activity of the cells and of the cell systems or organs. It is the same in disease and in health. It is sometimes accelerated and sometimes retarded, and when this deviation from the rule is detrimental to the ends of the whole organism, we call it disease."

So it may be said with criminals, it is impossible to define the limits separating normal from degenerate persons. All mental processes are governed by the same laws, and all of us have at some time in our existence criminal tendencies; but it is only when our evil propensities become detrimental to the community in which we live that we are considered criminal.

Let us consider the evolution of crime, in order that we may rid ourselves of the idea that those acts which we are accustomed to call criminal are confined to the human species. Animals low in the scale of life are prone to commit such criminal acts as infanticide, murder and thieving. Snakes very often devour their young. Lubbock cites instances where bees and ants kill those of other species for the purpose of robbery. Romanes, in his "Animal Intelligence," gives any number of instances of crime committed by animals. Speaking of a certain species of ants, he says, judging from experiments, it would seem that hatred was a stronger passion than affection, while in other species sympathy and affection seem to be more highly developed. Audubon is reported as having observed the thieving propensities of birds. Many species are habitual thieves and often secrete articles apparently of no value to themselves. The tendency to steal and to hide things is one of the strongest traits of the wolverine. Rats, mice, wolves, rabbits and birds have been seen to kill those of their own species. Dogs have been known to slip their collars, and go miles to kill sheep, then wash the blood from their bodies in a stream, return before daylight and slip on their collars. Monkeys many times will kill their young, when tired of carrying them. They are also fond of deception and are great thieves. Many animals develop uncontrollable passions, and while infuriated often kill those of their own species or even family.

While these facts and many others have been observed, it is true that the maternal instinct is highly developed in animals, and that affection is so strong in some that they will die for or in defense of their own species, and in some instances those of other species. Though some of the acts mentioned may have been done in self-defense or self-preservation, there are many apparently purposeless acts against the natural instincts of animals, that may surely be classed as morbid.

Turning our attention to the uncivilized races of men, we find crime especially frequent. The primitive tribes, as a rule, place but little value on human life, especially on those of women and children. Wood, in his "History of the Uncivilized Races of the World," cites any number of instances to show the criminal tendencies of the savage. Some of their crimes are associated with their religious or superstitious beliefs; but many seem to be the natural result of unrestrained animal passions. I have been told by one living among our American Indians in Idaho that infanticide is common.

The study of childhood offers much that is of practical as well as of scientific interest. The psychology of children occupies a middle ground between that of the lower animals and the adult man. It may not be pleasant to some to associate our babies with the lower animals; but it is, nevertheless, true that a close study of human embryology and the psychology of childhood teaches us that there are definite relations between the workings of the animal and infant mind. An infant at birth has its animal instincts highly developed, and in gesture, mimicry, and instinctive movements bears a close resemblance to the monkey. As the minds of children gradually develop, those qualities which are prominent in criminals and degenerates are the first to evolve. The idea of self enters more largely into all their acts than in normal adults. The emotions of the child are more easily aroused and less under the control of the will than in later life. Attempts to injure those around them are very common during fits of anger. Petty thieving of tempting morsels, of playthings and of similar articles, and the practice of lying are common, even among carefully trained children. Capital crimes are not unknown among children. Murder and assaults have been reported many times. Children have a very imperfect idea of ownership and responsibility. Deceit, vanity, pride, superstition and cruelty are common traits in early life. These qualities, so undesirable in adults, are usual in children; and an exaggeration of these very traits in criminals marks them as vicious members of the community.

Idiocy, feeble-mindedness and epilepsy are accompanied by mental impairment, and often lead to crime and acts of violence. These affections may be due to congenital defect, to injuries, or to disease. Emotional instability is common among criminals, and often develops while they are secluded in prison. They frequently have periodic explosions that resemble epilepsy and which, like that disease, are more frequent in hot weather. One observer states that four per cent. of the criminals under his care were subject to violent fits of passion; among women these attacks are more common during the menstrual period.

Lombroso has pointed out that those regions in Italy that produce the most epileptics also produce the largest number of criminals. The relation between insanity and crime is an important one, although too large a subject to be considered in a paper of this kind. Those crimes that lead most often to insanity are potent agents in the production of crime. For instance, syphilis, alcoholism and sexual excesses are responsible for much of our insanity and our crime.

Jacobi says: "The constitutional criminal is a tainted individual and has the same relation as the epileptic to convulsions. The essential reason of abnormal brain action is abnormal brain structure." Later he says: "There is no especial type of insanity or of criminality. There is but one thing fixed, that is, the relation of cause and effect, the correlation of physical causes, and mental and moral symptoms."

Lombroso, in his "Men of Genius," and Nordau, in his "Degeneration," give any number of examples of excessive nervous and mental action in men and women who have been prominent in their respective fields of activity. While it is true that Nordau has exaggerated the condition, it is, nevertheless, a fact that the history of poetry, art, music and literature is filled with examples of men and women who bore distinct marks of degeneration.

Many inherited insane tendencies, some succumbed by reason of disease, overwork or dissipation. According to one authority, insanity is forty times more frequent among criminal than among average men and women.

We can trace in all individuals a process of evolution in the building up of their natures. Animal instincts are highly developed at birth, next intellectual power is added, and finally moral and ethical conceptions help to round out a man's character.

That it is possible to have arrest of development during any stage is apparent, just as there may be arrest of development during the embryonic stage, leading to congenital anomalies. If the process of evolution is checked in early childhood, only the animal instincts exist, and idiots and imbeciles are the result. If the arrest takes place later, we have impaired mental power or feeble-mindedness. If the arrest or atrophy is postponed until manhood is reached, we may have intelligence, but no moral sense. There are in society to-day many moral imbeciles, whose intelligence disguises them from the world until they commit some heinous crime that reveals their true character to society.

Heredity exerts a marked influence in the production of criminals. Just as physical and mental peculiarities are transmitted from parent to offspring, so moral and criminal tendencies are, likewise, inherited by children of degenerate parents. Some would explain these apparent transmissions of criminal tendencies to environment, but after considering all points, there seems to be no doubt that criminal tendencies are actually transmitted. We do not mean by hereditary transmissions of criminal tendencies that parents must have been actual criminals in a legal sense, or that the children are; but that the inebriate, the epileptic, the insane, the morally depraved beget children that are deficient morally and are prone to drift into criminal life, without regard to environment.

The Jukes family, as studied by Dugdale, is an excellent illustration of the influence of heredity. From the head of the family, Max Jukes, a great drunkard, descended, in seventy-five years, 200 thieves and murderers, 280 invalids attacked by blindness, idiocy or consumption, 90 prostitutes and 300 children who died prematurely. Out of 709 descendants carefully studied, but few were honest. Of the men, not more than 20 were skilled workmen and 10 of these learned their trade in prison.

It has been observed that criminality, like idiocy, tends to run in the line of the eldest sons. Morris gives instances where, for four generations, marks of degeneracy were plainly evident, and with the fourth generation the race became extinct. He also points out the tendency to degeneracy in children of intemperate parents.

It would be interesting to study more in detail the influence of such diseases as syphilis, tuberculosis, alcoholism and meningitis in the production of abnormal conduct. That these and many other affections are important can hardly be doubted after studying carefully the histories of many criminals, who, either by inheritance or from acquired disease, have dyscrasiae, which enfeeble them physically and render unstable their nervous systems. We must not infer from this study that criminals and degenerates can be arranged like pathological specimens in a musuem, each labeled as a distinct morbid entity, with a proper diagnosis, and all dependent upon actual disease. We must remember that environment, education, association and climate bear an important relation to vicious conduct; and it is only by weighing these various factors in each individual case that a scientific diagnosis can be made.

The conception of crime on the part of many reminds one of those days of superstition and ignorance when those affected with insanity, epilepsy, chorea and similar diseases were considered to be bewitched by the devil, and therefore were cast into prison, hanged, and even burned at the stake. The history of witchcraft in our country is a blot upon old New England. To-day all is changed. We have asylums for the insane, colonies for the epileptics and homes for the feeble-minded, while the aim is to reclaim these unfortunates and to return them as useful members of society.

From our experience in the past in dealing with those mentally impaired, and from our present knowledge of the normal and diseased workings of the brain, can we not apply similar methods to the study and care of criminals and degenerates?

This problem is of vast importance to society and the State; and it behooves the medical profession to give the same study and thought to it as they would give to mental diseases in general. It is necessary that we keep in touch with this problem in order that we may give an intelligent opinion and wisely direct legislation along lines that are practical, scientific and just.—"The Physician and Surgeon."

Hygiene as Old as Moses.

By ELIZABETH CAMPBELL, M. D , of Cincinnatti.

The Women's Medical Journal.

FROM the pages of history we learn that hygiene as an empirical science is as old as the tables of stone, fundamental principles governing the laws of health having been given to the children of Israel by Moses. The Greeks and Romans were thoroughly alive to the value of hygienic measures. Think of the wonderful supply of pure water which flowed through the fourteen noble aqueducts of ancient Rome, bringing to each one of her million souls three hundred gallons daily.

Mr. Hill, of Toledo, has truly said: "How much of the courage of the Roman soldier or the wisdom of the Roman statesman was due to the excellence of their public water supply no one can say, but certain it is that with a polluted water comes the weakening of the powers of body and mind, and no community can be brave and wise and persevering if disease and death are loitering on the threshold."

To their system of physical training and rigid enforcement of all the laws which maintain health and thereby prevented disease we may certainly attribute the wisdom and courage of the Greeks, which even now at this present time constrains us to say with Hypatia: "Yes, the statues there are broken, the libraries are plundered, the alcoves are silent, the oracles are dumb, and yet who says the faith in heroes is dead?"

Between that golden age of wisdom and now, surges the flood of the dark ages as black as midnight, from the waters of which millions of souls send up their agonizing cry of utter misery and woe. Dense bewilderment seems to have possessed the minds of men. They lost the keynote of health and happiness, and hence were plunged into depths of plague and pestilence.

The pages of history which record the plague in Europe which tell of the awful slough of despond into which the people had fallen, the moral as well as physical degradation of the nations, are fraught with hideous visions, the soul of the student is made sick with horror.

When the beacon lights of hope began to gleam through the wilderness of despair they were welcomed as nothing else could have been in the history of the world. The story of brilliant military achievements, the deeds of a Washington, a Wellington or a Napoleon stir the average mind to enthusiasm more surely. But to the thoughtful those who fought in the awful war of disease and death, in the midst of carnage far more frightful than the sword could create, belong to the list of greater heroes.

Gradually men began to find solutions to the enormous problems which confronted them, groping their way without a sure knowledge of causes which underlay existing evils. Finally came the era of microscopical illumination, and scientists gave to the people not theories, but facts—incontrovertible truths gleaned from experimental researches in laboratories, demonstrating beyond the shadow of a doubt the cause for the diseases which ate at the vitals of the nations.

HYGIENE A SCIENCE.

Hygiene then became a science with a basis, a sure foundation, and the great fact that disease may be prevented is the most dazzling feather that has ever fallen into the hands of men from the great white bird Truth. Slow of belief, incredulous, yet eager to catch at straws of hope, men began to put the teachings of these wizards of the laboratories into practice, and, wonder of wonders, the beast cholera cawled back into its lair, dismayed at the insurmountable barriers which science had laid in its path.

Smallpox exists now to the shame of the infected spot, and all the world points a finger of scorn at a community which harbors such a guest. The strongholds of diphtheria with others of the contagia have been taken, making a continued recital of that which has been accomplished in the name of preventive medicine sound like the march of a triumphal procession. Certainly no task is more pleasant than such an enumeration.

Unfortunately, however, the battle is still on. The end is not yet. Hence, while looking backward with joy over that which has been gained, and looking forward with the hope of ultimate victory, we must not lose sight of the present needs, nor relax for one moment the eternal vigilance that is so necessary.

Five millions of the inhabitants of the United States are suffering from the dread disease tuberculosis, and yet it is perfectly well understood that it is communicable, and may, in a large measure at least, be prevented. In the light of this knowledge, it is almost incredible that the utmost indifference exists in regard to preventive means. A frightful procession of emaciated, pale ghosts afflicted with this disease are marching in agony to the grave, and with this object lesson ever in view it is only here and there that we hear of any action taken to protect the great mass of people, who are daily and hourly exposed to the arch enemy.

Think for a moment of the millions of dollars that are spent by the government for all sorts of projects, and then listen, camly if you can, to the objection raised against the destruction of tuberculous cattle—it costs too much. Such an excuse is fairly maddening, especially when we are told that if such a prolific source of this awful foe to the human race was eradicated the death rate would be reduced one-half.

The history of all that has been accomplished in the prevention of disease teaches that without legislation but little progress can be made. Of what practical value would the discovery of Jenner have been had vaccination been left to the free will and discretion of the individual?

But recently the New York Board of Health has taken steps to prevent the spread of tuberculosis in that city, which will mark an epoch in the history of sanitary science, and doubtless will be an additional proof of the great value of wisely executed laws.

The ubiquitous critic is abroad, however, even though that which he attacks is a measure looking to the universal good. It is with grief that we find even physicians taking exceptions to some of the measures which the New York Board is advocating.

Certainly it is most necessary that there should be a unanimity of feeling and most hearty co-operation all through the departments of medicine and legislation that there may not be the slightest obstruction to the onward sweep of the great arm of the law in exterminating the common foe.

MEDICAL INSPECTORS FOR SCHOOLS.

Again New York has led the way into untried paths of hygienic science by appointing physicians as school inspectors. By this wise plan 140 children were found in the schools suffering with contagious disease, and hence unfit to associate with the well children. Such diseases were unrecognizable to the untrained eye, and would serve as pivotal points for the rapid infection of others. This is surely a long step in the right direction.

School hygiene is a fascinating field for the enthusiastic sanitarian. So pre-eminently is it the foundation stone for the future health of the nation that we witness with the utmost impatience the slow dawning of the day that shall find our children amid environments which will help them into a noble maturity, rather than fighting, as many of them now are, against disease-producing conditions which are fatal to the highest development.

Consider the fact that 218 out of 730 school children are afflicted with curvature of the spine, due in all probability to improperly constructed seats and desks. Our hearts are weary when we consider that in our own city very little has been done for the children obliged to use the older school houses. It seems almost incredible that in the glare of the light of this century there are rooms full of children in Cincinnati with such imperfect artificial ventilation that little heads are aching and insidious poisons, with which the close atmosphere is saturated, are doing their deadliest work, and yet teachers are absolutely forbidden to open windows during certain months of the year.

We also recall the fact that our city is deplorably deficient in any organized attempt to supply infants and invalids with pure milk.

Many cities have now in successful operation milk laboratories, where perfectly pure milk can be dispensed and modified according to physician's prescriptions. Nothing in the field of preventive medicine affords a greater satisfaction than the great good accomplished by the scientific feeding of infants. Knowing this, it is hard to await the time when public opinion shall be sufficiently aroused to demand such facilities for Cincinnati's little ones.

It will cost money, of course. What good thing does not. But, as an eminent medical man of Boston has recently said: "Money is not ill spent in developing in the best way those who must make and use that money in the future. Let not the millions spent in charity be entirely given to the treatment of disease. Let some of it go to the cause of prophylaxis in the early periods of development, which will do more to withstand disease when it comes than pounds and quarts of drugs."

This hasty review of the battlefield, with an enumeration of a few points of attack, will serve as a diagnosis in order that we may look finally to the remedy.

PUBLIC BENEFACTORS.

Our hopes certainly centre about a wise code of laws properly enforced. In order to secure such legislation we must create public opinion. In order to create public opinion we must have educated, devoted teachers. And who shall teach the people these truths wrought out by lonely, diligent research if not physicians?

For this reason, if no other, our medical colleges of to-day need such elaborate equipment as will enable the student to master the fundamental facts which underlie preventive medicine.

All honor to those who, with wise forethought for the future good of the race, are placing in the path of students devoted to the nobles of sciences such laboratories and accessories as the study now demands.

Constantly new means for piercing the darkness of mystery which surrounds so much in nature are being devised. Dr. Holmes so beautifully has said: "As the light of the untried world to an infant, so is the dawning of the light resting over the unexplored realms of science to the student."

Nothing brings greater pleasure to a faculty than to hasten the dawn over some field hitherto in darkness by being able to supply the students under its care with such appliances as they need for exhaustive research. Hence the demand keeps pace with the rapid discoveries, and the Oliver Twist cry for more is continually heard in our colleges.

With increased advantages the responsibilities of the medical profession are many fold greater. And it becomes a solemn duty to disperse with generous hand the knowledge which has been gained through added facilities.

The Bicycle and the Perineum.

The injuries to the perineum caused by the bicycle are of a very serious nature. Lesions such as cutaneous erythema, abscesses, haematoma, and a more or less profound anaesthesia caused by repeated pressure have been observed, as well as certain functional troubles, such as retention of urine in men and undue frequency of urination in women. Chronic inflammation of the canal and certain inflammatory complications may be produced or aggravated by the bicycle.—Dr. M. E. Aldhuy, Gazette Hebdomadaire de Medecine et de Chirurgie.

THE ANNALS OF HYGIENE
PUBLISHED MONTHLY
SUBSCRIPTION TWO DOLLARS
A YEAR, IN ADVANCE
Address all communications to
HYGIENE PUBLISHING COMPANY

EDITORIAL

All subscriptions to "THE ANNALS OF HYGIENE" are taken "until ordered discontinued," and no agent has authority to make any other arrangement. At end of time to which subscription has been paid or promised, a bill for a year in advance, with return envelope, is sent, and if journal is no longer wanted, the subscriber should mark "Discontinue" on the bill and return to us. A failure to so return bill is considered an order to continue.

COMMUNICATIONS SOLICITED.

We are always anxious to receive short communications—500 to 1000 words—on practical subjects pertaining to hygiene. To any one sending us an acceptable article, we will forward THE ANNALS OF HYGIENE for one year *free*.

Important Notice to our Subscribers.

THE Hygienic Publishing Company, for many years the owners of this journal, have determined to improve it and bring it more thoroughly up to date. No journal of the same nature has ever reached the high standard of success shown by the Annals of Hygiene, if a wide and growing circle of readers can be called success, and we think it can. From Maine to Florida and west to California the journal goes to subscribers, who under their own signatures testify to their interest in the subject of hygiene and their appreciation of the magazine. It is hard to improve a good thing, but shortly, surely not later than September, we hope to improve the Annals and to introduce departments of the utmost and universal interest:

Hygiene of the Household.

Hygiene of the Nursery.

Hygiene of Athletics and Physical Education.

Personal Hygiene.

Municipal and State Hygiene, as well as

General Hygiene.

will be thoroughly written up by the best authorities and presented in a scientific but popular form. Hygiene is a subject that is coming to the front by leaps and bounds. Anyone who, from having a half-sick, cross and crying baby, comes to think life hardly worth living, and then sees the magic touch of hygiene, a well, happy, lovable baby, never fails to believe time or money well spent that gets such results. Or, again, take athletics. How easily overdone or badly done; thus how much lost, while what infinite good for us all, particularly our children, should and can be accomplished when we have the necessary knowledge.

Probably nothing helps us more in the struggle against immorality and disease than a little knowledge on the hygiene of athletics and of the person.

The world is growing larger through the decreased death rate, brought lower by hygiene, and as we surely do not want to add to it through our loved ones, let us carefully study the science, get all the information possible and obey its laws. It is also well to note the growing population, the keener competition and the burden put upon us, particularly upon growing children, by weak, unhealthy or imperfectly understood bodies, and it is an obligation to ourselves and to them to lift this burden, if it is possible.

HYGIENE FOR THE CHILDREN.

The Mouth and Throat.

An infant opens its mouth when pressure is made upon the chin with the finger.

In a very young infant, the edge of the gums is sharp. As the teeth begin to develop, the gum widens in places.

A hot, dry mouth indicates fever, as does also a white coat upon the tongue.

A bad breath and a brownish coat upon the tongue indicate indigestion.

A fecal odor of the breath is often present in cases of constipation.

Aphthe, or ulcerous patches, accompanies gastric irritation.

The Urine.

The urine of a healthy child is limpid and colorless; it does not stain a napkin. In health, the discharges sometimes occur as often as once an hour, and again not more than six or eight times in twenty-four hours.

If urine is not passed during a period of twelve hours, the matter should have immediate attention.

Staining of the napkin usually indicates indigestion. A blackish stain is usually the result of acute disease of the kidneys.

Pain in passing urine indicates excessive acidity of the urine, stone in the bladder, or irritation of the urethra from some cause; and if not soon relieved, the case should be carefully investigated.

The Skin.

After the first week or two the skin of a healthy child is white and transparent. The red color of the skin of a new-born infant begins to disappear after the first week.

A bluish appearance of the lids and lips indicates imperfect purification of the blood, with probable disease of the heart or lungs.

A yellow color of the white of the eye indicates jaundice.

Chronic constipation produces a dingy or muddy complexion.

A waxy pallor is present in kidney disease.

An unusual whiteness is usually present in acute or chronic disease, accompanied by great exhaustion.

The Bowel Discharges.

For the first six weeks of an infant's life the bowels should move three or four times daily; from two months to two years, two movements a day is the average; after two years, one movement daily is the normal number, though overfeeding may give rise to a larger number.

During the first few weeks of an infant's life, the stools are soft and yellow or orange in color, and usually have a slightly sour odor. As age advances, the stools acquire greater consistency, and after two years they possess the same general character as those as of an adult.

Too frequent stools are present in diarrhea. The presence of undigested food, cheesy lumps and a greenish color, indicate indigestion. The presence of mucus indicates intestinal catarrh. Clay-colored stools show a deficiency of bile. Blood clots indicate hemorrhoids, or ulceration of the intestinal mucous membrane. Membranous threads indicate a form of catarrh of the intestines.—J. H. Kellogg, M. D., in the Healthy Home.

A case of infantile typhoid fever is reported due to the kiss of the father who was dying of typhoid intestinal perforation.

Sunshine as a Disinfectant.

The scientists appear to be finding out that the order of nature is about as nearly perfect as is necessary for the health and comfort of man. So much is said regarding microbes that one may think that poison and death lurk in every nook and by-path, to say nothing of the vast air ocean that surrounds us. Now it is being discovered that light and free air are sanitary agents of the most powerful kind known. Sunlight is potent to destroy poisonous gases and pernicious bacilli. So that no better method for disinfection exists than exposure to the sun's rays. How far such disinfection might go has been shown by experiments.

Arloing proved that anthrax bacilli are destroyed by the solar rays. Koch has shown that tubercle bacilli cannot be exposed to the same for very long and survive. Fermi and Celli, in a series of experiments, demonstrated that germs in aqueous suspension are likewise killed, and Raspe asserts that the sun is able to hinder the development and even destroy bacilli lying on the surface of the soil or submerged in water.—From The Healthy Home.

Chronic Malnutrition of Infants.

The combination of yolk of egg and olive or cotton seed oil made into an emulsion is found very useful in cases of rickets or chronic malnutrition in infants. The emulsion can be made as follows: Olive oil, two ounces; glycerine, one ounce; yolk of one egg. Make an emulsion, and add one-half minim of creosote to each drachm. Occasionally it is better to use a smaller amount of creosote when this agent is not well borne by the stomach. A full teaspoonful of the emulsion is given three times a day after feeding. The preparation seems to be readily tolerated, even when the stomach is irritable.—Practitioner.

Spasm of The Glottis.

Not long since the writer was dining with a friend well and strong. It was observed that he took a teaspoonful of vinegar into his mouth and swallowed it. Almost instantly there was a struggle for breath. The man grew pale, then blue. The struggle for breath which lasted for perhaps a minute was frightful to behold. When at last a whistling, crying sound indicated that the air had found its way to the lungs, all shared the great relief it afforded. The short space of time that elapsed while the man was struggling for breath, seemed almost an age to his anxious friends. What happened? There had been a spasmodic closure of the glottis. The glottis is the narrowest part of the larynx, and the larynx is the organ of voice placed at the upper part of the air passage. When this is closed no air can get into the lungs, and should it remain closed for any length of time, death must certainly follow. The spasmodic closing of this passage as above described in the adult is not common. Should it occur frequently in an adult it would indicate that some serious organic disease was developing.

With children this affection is not uncommon, and probably it is the direct cause of more deaths than is generally supposed. Undoubtedly in a great majority of the cases where the child is fed, and put to bed all right, to be found dead in a few hours later, the cause of the death has been from a spasm of the glottis. Children under three years of age who have abnormally heightened excitability of the nervous system, scrofulous children, and those who suffer from rickets, especially the latter, are the ones most likely to be affected.

An attack may occur without warning. A whistling, gasping sound is heard, the child throws itself backward, grows pale, then blue, moves its extremities in an uneasy manner, eyes roll back in the head, and the cold sweat cover its forehead. These spasms do not last long. The longest not over two minutes, yet there may be a succession of attacks, one following the other quickly.

These attacks are dangerous. A child seeming perfectly well may be carried off in one of them almost instantly. For immediate relief of a spasm, the patient should be taken up, and cold water applied vigorously to the head and neck. This is about all there will be time to do after the spasm is noticed. If there is any tendency to its recurrence, give the child a hot bath, and such medicines as are capable of moderating the irritability of the nervous system, such as bromide of potassium, musk, etc. These remedies can only be prescribed properly by an attending physician.

Parents should be careful not to give nourishment too quickly after one of these spasms, as the taking of food may cause another. In fact, even touching or moving the child may bring one on.

As has before been intimated, rickets are commonly the underlying cause of this affection, and for permanent relief the treatment should be directed to the cure of this disease. Change of air, cod liver oil, syrup of the iodide of iron, properly administered are the remedies most needed.—A. W. Low M. D., in The Healthy Home.

Fresh Air for Children.

By **Edith A. H. Fyffe, M. D.** The Chicago Women's Medical Journal.

It is a well known fact that a suicide cannot kill himself by holding his breath. That is a function over which he has little o1 no control. Breathe we must. Slow murder and suicide can be performed, however, by impure air being taken into our lungs, and this, I am sorry to say, is an every-day occurrence even in this enlightened age. In the homes of the very poor the wonder is that the inmates ever live, one room often being the sole home of a numerous family, plus boarders, and the principal article of furniture being a stove in which every conceivable kind of fuel, except good coal, is burnt.

In the class just above this, the respectable working people, those burdened with a "front room," the conditions are nearly as bad. "Carpets and best furniture being bought on time must be cared for." In a home of four rooms that I have seen lately, there are two children, one and three years old—poor, white-faced, delicate little things. The mother is above the average of that class in intelligence, house and children being beautifully clean. The kitchen, a north room, where they lived principally, was backed up to a tall house. Light could come in the window, but sun never. The bed rooms were worse, both opening on a narrow court. The front parlor was large and lighted by two south windows, but—it had a carpet, and "the carpet might fade." It was suggested that sheets and old comforters laid on the floor might help matters, for the children must have air and sunlight; they were to stay in there and play in the sun. The mother said, "Oh, Doctor, I will be so glad when summer comes and the Sanitarium opens. I send the children every day. When I can't take them my mother goes. I send them whether they are sick or not." Every city—even the small ones—should have a Fresh Air Sanitarium for its babies. On the principle that save a penny and the dollars will take care of themselves, so save the babies and make strong citizens of them, and this will be a better world. We in Chicago are blessed with two of these "life-saving stations," and we need both. The oldest, "The Daily News Sanitarium," in Lincoln Park, and the new one, "The Convent of La Rabida," in Jackson Park. Every city should have a fresh air society. Even a tent will do to begin on, with a shady place in which to hang hammocks and a stove where food can be prepared, and always a boiler of hot water being the absolute necessities.

It takes may years of thought, experience and money to have as perfect a sanitarium as the one in Lincoln Park, with its offices, drug room, matron's room, kitchen, bath rooms, hospital ward where the dangerously sick mites are tenderly wheedled into living, and the large one open on three sides pavilion, hung with hammocks and alive with baby buggies, the fresh air from the lake always blowing in, and bringing life with every blow, the internes in their white dresses, and the blue gowned trained nurses complete a beautiful picture.

In 1895 there were treated 20,557 sick babies; of these 3,533 were hospital or desperate cases; 47,551 babies were registered, and only 33 death certificates were issued—the chances being that there would have been thousands were it not for the "divinely beautiful charity." This last year the attendance was much larger. The great percentage of these cases are malnutrition and that scourge of babyhood, cholera infantum. It is wonderful to note the effect a bath, diet, simple medicine and a hammock has on a poor, tired, sleepless little mortal, the life-giving air, as the mothers often say, "doing the business." And those poor mothers who come from close, heated rooms to that "Paradise on the Lake." It does them as much good as the babies, the kind words of the matron, advice from the doctors, the practical care of the nurses, the 'cup that cheers but not inebriates" from the kitchen—it is no wonder they look forward to the summer.

Fresh air and sunlight are as necessary for a child as its food. Many a mite dies from poisonous air through mistaken kindness; windows being stuffed and sealed up, to keep out draughts, and even then the sunny ones filled with flower pots, keeping out what little sun there is.

A summer baby should be taken out on bright days, carried in the arms, when it is three weeks old. It should be out twice a day, and as it grows older it may be out two hours at a time.

Father—"Well, Tommy, how do you think you will like this little fellow for a brother?"

Tommy (inspecting the new infant somewhat doubtfully)—"Have we got to keep him, papa, or is he only a sample?"

An authentic case is described in Memorabilien for February, of a woman of forty, who had borne children eleven times; three times twins, six times triplets and twice quadruplets, and was again pregnant at the time of writing. It is not a recent case, but dates from 1808, although never recorded before in medical literature. The mother herself was one of a set of quadruplets and her husband had been a twin. Only three of her thirty-two children were still-born.—F. A. M. A.

Motherly vanity, which tempts otherwise sensible women to commence early to direct their attention to the formation of slender waists for the little daughters, is a prolific cause of weakness and debility in the rising generation.

In examining the throat of a child, a person should stand behind the patient, and give no opportunity for the secretions to be coughed into the face of the examiner, or to find lodgment on his clothing.

P. M. Laffan describes in the British Medical Journal, Jour., according to the Amer. Jour. of Insan., an area of four square miles in County Meath, Ireland, with a population of about 300 persons, one-half of the total number of families having one or more insane, idiotic, goitrous, or suicidal member. He attributes the large number of insane within the endemic area to consanguinity, and heredity.

Infantile Diarrhea.

A. F. Plicque (La Presse Medicale, July 1, 1896). The author recognizes four varieties of diarrhea: (1) Simple diarrhea, caused by cold or by defects in alimentation. This should be promptly treated by regulation of the diet, and by a purgative, such as castor oil with orange juice, or sodium sulfate in sugar water. Should further medication be required, injections of starch water with from one-half to a drop of laudanum may be employed, or the internal administration of bismuth or astringents. Persistent diarrheas must be treated by opium. (2) Bilious diarrhea, which may be discriminated from green bacillary diarrhea, by the addition of a drop of nitric acid to the stains made by the fecal matter, when the characteristic violet-rose coloration will be seen. Alkaline treatment is all important; sodium bicarbonate is given at the rate of fifteen grains in twenty-four hours for each two and one-half pounds of the child's weight, but the daily dose should never exceed more than one and one-half drachms of the alkali. Biliary diarrhea due to tuberculosis of the liver will resist all treatment. (3) Green bacillary diarrhea may be acute and cause death in one or two days, or, becoming chronic, may prove fatal from athrepsia. In addition to general hygienic measures we should give lactic acid. (4) Cholera infantum may occur during the course of either of the varieties of diarrhea alluded to. Its two special symptoms are peripheral algidity with cyanosis of the extremities, with, perhaps, rectal elevation of temperature and collapse with complete inertia, which is occasionally interrupted by subsultus and respiratory effort.

Feeding should be insisted upon in spite of the vomiting, chicken broth being often better tolerated than milk. Milk with a few drops of brandy should be given by teaspoonfuls. The medicinal treatment consists of lactic acid, hydrochloric acid and laudanum. Internal stimulants, as champagne, coffee, etc., or external ones, as hot mustard baths and injections of ether, should be employed.—Philadelphia Polyclinic.

NOTES AND COMMENTS.

To The Bicyclist Bending Forward.

Oh, youth, who, bending forward, rides apace,
With melancholy stamped upon your face,
Pursuing pleasure with a frenzied eye,
Yet mocked by her, however fast you fly,
Are you aware how horrible you look?
No guy invented for a picture book
Was ever a more painful sight than thou,
Lord of the bent back and the anxious brow.
Oh, sit up straight and try to wear a smile!
Be less intent to pile up mile on mile,
Enjoy the prospect as you glide along,
The trees, the sunshine, and the robin's song.
To us who view you scorching day by day,
Bent on your bar in such an awkward way,
You are the homliest thing on earth, my lad,
Oh, sit up straight, and make the landscape glad!
—Robert Grant, in Harper's Weekly.

Tea and Coffee Poison.

Tea and Coffee Poison.—An eminent Chicago physician remarked some years ago that thousands of people are suffering from tea and coffee poisoning. On careful observation, we are confident that a large proportion of the women who suffer from migraine, or sick headache, nervousness, neuralgia, and indigestion, might properly charge their suffering, at least in a large degree, upon tea and its congener, coffee. The drugs have long enjoyed a reputation which they do not deserve, owing to the erroneous notion embraced in the poetic lines: "The cup which cheers but not inebriates." The fact is that tea and coffee do produce a mild sort of inebriety. They are brain excitants; it is for this reason that tea produces sleeplessness.

Sir William Roberts has shown that both tea and coffee, even in small doses, prevent the digestion of starch. Yet tea and toast is a common prescription for the sick. The numerous examples of tea and coffee poisoning, tea drunkenness, insanity from tea drinking, paralysis of tea tasters, and the peculiar form of neurasthenia which has been traced to the use of tea and coffee, are certaily sufficient to convince every candid and intelligent member of the profession that the use of these drugs should be discontinued.

Unfortunately the majority of persons who have been long accustomed to the use of tea find it almost as impossible to renounce it as to break the habit of taking opium or alcohol, or any other drug to which one may have become addicted, a sort of drug habit being established which clamors loudly for gratification when the accustomed indulgence is withheld.—From Modern Medicine .

Resuscitation of the Apparently Drowned.

The case of a boy who was resuscitated from apparent death by drowning after having lain in a cold room for an hour after rescue from the water, is reported by Dr. W. H. Miller, in the Health Journal. Efforts at reviving him had been made without result. When the doctor reached him, he seized him by the legs and suspended him head down, and at the same time introduced his fingers into the mouth, pressing the tongue forward and downwards, tickling the throat with the finger and removing water, mucus, etc., from the entrance to the windpipe. The patient was then suspended for eight seconds, then having him quickly laid upon his back, the operator pressed the air out of his lungs; by pressure on the breast-bone for two seconds; again he was quickly suspended for seven seconds, and the pressure repeated, dropping one second to four seconds. At the fourth suspension, a slight pressure of the jaw was felt on the operator's finger; upon the next suspension a pressure was felt and the faintest whisper heard; at the next suspension a firm pressure and a loud cry. The treatment was completed by the administration of stimulants, rubbing, application of hot bricks and blankets, and finally putting to bed to sleep. The happy result in this case shows the great importance of continuing efforts at resuscitation under even the most discouraging circumstances.

It is asserted that the German bath houses, many of which are very fine architecturally, are on a paying basis, although the individual charge for a bath is only the equivalent of two and a half cents in American money. And, moreover, in those cities where baths for adults are most common, it is the custom to have rain baths in the school-houses for the pupils, and notwithstanding that the time for the baths is taken from regular school hours, it is found that nothing is lost in study, the refreshing and tonic effect of the baths compensating for the loss of time.

In more than forty cities on the Continent baths for the children are found in the school-houses, and in Germany it is the settled policy in regard to new school buildings.

One bath house in Europe, which cost, including all the fixtures, $40,000, accommodates 500,000 bathers annually, who pay less than three cents each for their bath and yet support the establishment.

Danger of Standing Water.

Danger of standing water, that is, water that is left standing in the kitchen or bedroom, and, above all, in the sick room, over night, is liable to contamination by the absorption of impurities afloat in the air of such rooms and to be rendered wholly unfit for use. No matter that the water is cold, even to near freezing, it is so much the more liable to absorb and hold in solution the foul gases and organic particles to which it has been exposed. It is dangerous to use such water. Water should not be so left; but if it should chance so to be it should be thrown away. Fresh drawn water only should always be used for culinary purposes, as well as for drinking, whenever practicable. Moreover, faucets over sinks and wash basins are always more or less liable to contamination, hence the first water that flows on opening them after they have been left all night without use, should always be let flow away—it is dangerous to drink and unfit for the teakettle, or for cooking water; even boiled disease germs are unwholesome.—The Sanitarian.

A man who had been ill, informed a friend that Dr. Blank "had brought him through."

"No; he did not," replied the pious neighbor; "Providence saved you."

"Well," replied the former, "maybe He did, but I know Dr. Blank charged for it."—Health Journal.

A Streak of Sense.

The signs is bad when folks commence
A-finding fault with Providence,
And balkin' 'cause the earth don't shake
At ev'ry prancin' step they take;
No man is great till he can see
How less than little he would be
Ef stripped to self, and stark and bare
He hung his sign out anywhere.

My doctern is to lay aside
Contentions and be satisfied.
Jest do your best, and praise er blame
That follers that counts just the same.
I've allus noticed great success
Is mixed with troubles more or less,
And it's the man who does the best,
That gets more kicks than all the rest.
—James Whitcomb Riley.

Disinfection of Soiled Linen.

Beyer (Fortschrit. de Medicine, No. 1, 1897), has tested different methods employed for the disinfection of bed linen and underclothing. The ordinary methods by boiling are not suited to these articles, as the presence of blood, pus, and feces causes an eradicable stain if a high temperature is used. Soaking the garments in solutions of various soaps for one or two days failed in every instance to kill cholera, typhoid, and pyogenic organisms which were mixed with the feces with which the garments were smeared. In some cases the germs were killed when the solutions containing the linen were kept at 50° C. for a few hours. With lime-water the results were much better. Sample garments which were soaked in this solution for twenty-four hours were found to be sterilized. An equally good result was obtained in a hospital where about one-half a cubic meter of soiled linen was soaked in lime-water for forty-eight hours—or for twenty-four hours if the clothing was first rinsed with lime-water and then placed in a fresh solution. The lime-water does not injure linen or cotton goods, but shrinks woolen to such an extent as to prevent its use.

Hay Fever.

The author, Dr. W. F. Strangways, of Flint, Mich., read a paper, over a year previous, entitled, "Hay Fever, a Successful Treatment Founded on a New Theory," which attracted considerable attention. In this former paper it was claimed that while pollen, as a rule, played a part in this disease, it did not irritate the mucous membrane nor produce a vaso-motor paresis by its direct influence; that the amount of pollen in the air was too small to act as an irritant. That in all probability a protoplasmic substance, found in pollen and elsewhere in the vegetable kingdom, acted as a ferment, causing the formation of a toxine which was the real exciting cause. The theory was advanced that the toxine or toxines could not be developed in acid solutions. The exhibition of a wash of

Acetic acid	m ij
Resorcin	grs. iss
Sodium chloride	grs. iv
Aqua dest	oz. j

gave complete relief in many cases, and the administration of large doses of muriatic acid, well diluted, increased the body's resistive forces, and inhibited the generation of the toxine.

If this theory is correct, it partially explains why only a percentage of those having obstructive pathological conditions are hay fever subjects, and why the introduction of large quantities of obnoxious pollens into the nares of the others affects them no more than any of the ordinary dusts.

The author found most hay fever subjects tolerated very large doses of acid, if well diluted. He has given as high as one drachm of the C. P. acid, well diluted, during each twenty-four hours. If this remedy is used for two or three months prior to the expected attack, smaller doses will answer.

Nature works every moment, while local applications exert only a temporary influence; yet, often this temporary assistance turns the tide in our favor. The best results can only be attained when good drainage and proper circulation is obtained.

Since writing the first paper the author spent considerable time investigating the "impact theory," and concludes that the amount of pollen in the air is far too small to have any injurious mechanical, medicinal or poisonous influence. His investigations showed one rag weed plant for every thousand square feet surface, and from inquiry he learns that an elevation of several hundred feet above the earth's surface does not give relief. Probably rag weed pollen floats to 1000 feet elevation, but if the limit is placed at 500 feet it would give, for every plant, 500,000 cubic feet of air, not for one day only, but for six weeks at least. If the whole plant were pollen there would be a dilution of one part pollen to fifteen or twenty billion parts air. The rag weed was taken as an example, as the rose and golden rod pollen is much smaller in quantity.

Early in September a known volume of air was forced against a plate of glass besmeared with glycerine and then through a double filter of absorbent cotton. On the plate a few grains of pollen were found; in the cotton, none. These experiments demonstrated to the author that the amount of pollen in the air is so small that it is a physical impossibility for it to exert any direct immediate noxious influence.

Estimating the volume of tidal air at twenty-five cubic inches, his experiments showed an inhalation of not more than one grain of pollen for every thirty respirations.

The author reiterates that if his estimates are approximately correct, it demonstrates that it is the toxine or toxines generated from substances in the nasal chambers that is the cause of hay fever, and that our efforts to prevent or cure this affliction should be directed against the formation of the toxine or toxines.

The doctor condemns the use of morphine for the relief of this trouble.—Laryngoscope.

Removal of Powder Grains.

In the last issue of The Reporter, under "Current Literature," I noticed an article entitled, "The Removal of Embedded Powder Grains," in which the author says he has found the galvano cautery preferable to anything else. As he does not mention among other means used by himself and others, a remedy which I have found very satisfactory, it occurs to me that it might be well to give it to the readers of The Reporter. It is the application of croton oil.

The simplest and best way of applying the oil is on a pointed piece of pine wood, and the most convenient is a lucifer match. Whittle the end of the match down to a point. Dip the point into the oil and then press it into the powder grain in the skin, rotating it between thumb and finger as it goes in. It should be pressed in well so that the point will penetrate the whole thickness of the stain. In a few days the site of the powder grain will be occupied by a pustule, and when this discharges the particles of charcoal will come away with the pus.

Care should be taken to avoid loading the match too heavily with oil, lest it should spread over the skin where there are no stains. The end of the wood should be covered only with oil. If a drop forms at the point it will be deposited on the surface when the match is pushed into the skin, and will produce unnecessary pustulation. Each stain should be treated separately. If there are very many all should not be done at one sitting. If there are patches of surface under which a number of stains are close together, they should not all be treated at once, lest too much suppuration be induced and large cicatrices formed by the coalescence of continguous pustula.

The operation is simple and not very painful if done before the punctures made by the powder grains have healed. If performed later, the epidermis should be punctured with a small bistoury over each grain so that the point of the match can be pressed well into the true skin.

This method is superior to all others I have tried. My experience with the galvano-cautery for other purposes would lead me to believe that its use is attendant with much more pain, and the resultant sore would be large and hence give rise to more disfigurement. Then, too, the area of action of the oil can, with equal skill, be limited as well as that of the cautery.—Med. and Surg. Reporter.

Some Overlooked Points in Liver Troubles.

The above caption opens far too wide a subject to be dwelt with exhaustively, except in a systematic treatise; hence no attempt will be made to cover the whole field. My object is to give my personal experience and observations improved by all the extraneous sources I could command in the short time at my disposal.

First, I desire to direct your attention to the confusion that exists regarding the two widely different and entirely distinct conditions known as jaundice and biliousness. A proper conception of the difference between these conditions is most important, because of the radically different treatment required for them. Furthermore, it is important on account of the aid to diagnosis of a just appreciation of the two conditions.

The occurrence of jaundice is, as a rule, only possible when the common duct is obstructed and the secreted bile is reabsorbed. [There are one or two exceptions, viz.: A rare form of blood dyscrasia and yellow fever.] Thus it appears that jaundice is the result of the absorption of bile; while biliousness is the muddy, dirty discoloration resulting from the non-elimination of the elements which constitute the bile. Chemistry proves that color depends upon the arrangement of atoms; hence it is easily seen that the characteristic color of the bile could not be found in the tissues before the bile is elaborated from the crude materials in the blood. Observation and experience have shown this view to be correct. Biliousness, therefore, is only the result of functional derangement of the liver; whilst jaundice is the result of obstruction of common dust (from any of several causes, such as catarrhal tumor, parasite, or gall-stone, etc.). In the latter condition the liver is often perfectly normal; but is unable to deliver its secretion to the intestine.

It is readily seen from the foregoing statements that the treatment of the two conditions must be radically different. It is manifestly bad therapy to stimulate the liver in jaundice, for the reason that the organ is not at fault and an increase of the secretions would endanger the integrity of the tubes and increase the pain and pressure. Better far to give belladonna in full doses to dilitate the tube by its action on unstriped muscular fibre and soda bicarbonate to render the bile more fluid, thus to facilitate its outflow; the salines to deplete and relieve pressure.

In the case of biliousness we simply stimulate the functions of the liver, and for this we have many efficient remedies. Among these are some of great value too little used, viz.: ipecac and euonymus. These in combination with calomel, I think are the best. I am aware of the mooted question with regard to the action of calomel; but I must confess that my faith in it as a cholagogue remains unshaken.—Virginia Med. Semi-Monthly.

"That man Von Miner is the most careful individual of his health that I ever saw," said Van Wither. "What does he do?" asked a friend. "He's so afraid of appendictis," replied Van Wither, "that he takes all his grapes in liquid form."—Judge.

THE
ANNALS OF HYGIENE
PHILADELPHIA
VOL. XII NO. 8

COMMUNICATIONS.

Some Personal Observations upon the Effects of Changes of Climate upon Men and Animals.*

BY RICHARD COLE NEWTON, M. D.

Montclair, N. J.; late Assistant Surgeon U. S. Army; Visiting Surgeon to Mountain Side Hospital; Surgeon to the Greenwood Lake Division of the Erie Railroad, Etc.

"ABILITY to meet the environment" has been defined as "the condition of leadership." (By President Eliot, of Harvard University.) It is, without a doubt, also the condition of health. When we speak of climate and change of climate it is doubtful whether we appreciate how comprehensive these terms really are. Climate, from a therapeutic stand-point at least, should be defined to mean a man's environment, the resultant of the combination of a number of forces, some of which can be weighed and estimated, and some of which have up to the present time eluded, and perhaps always will elude, the most painstaking investigations.

The complexity of the problems presented by the study of climatology has doubtless discouraged many from undertaking it, and has rendered the labors of others more or less futile. But the time has now come when these questions must be studied, and, if possible, settled; and this society would be recreant to its trust and unworthy of its lamented founder,(the late Dr. Loomis) did it not keep in touch with the noble body of scientific workers who are, one after another, attacking the problems of pathology, and are even now in many quarters dispelling the clouds of ignorance and superstition which have so long obscured the fundamental truths upon which the laws of health and disease are based. The great need, which I think we all appreciate, in the study of climatology at the present moment appears to be more investigation of individual cases, more ascertained and established facts in relation to the action of climatic changes upon people or animals. It therefore seems proper to urge every observer to make his experience known, no matter how limited it may be, and so add to the storehouse of the facts of climatology (at present only too meagrely supplied) and, according to his ability, provide the means for the deductive study of this intricate science.

---

*Read before the American Climatological Association, at the Fourth Triennial Session of the Congress of American Physicians and Surgeons, at Washington, D. C., May, 1897.

The foregoing thoughts have led me to record my personal experience in the climate of the southwestern section of the United States while serving as an assistant surgeon in the army, in the hope that some, at least, of my observations may help along the great study which this society has undertaken to advance.

When I reported for duty at Fort Stanton, New Mexico, in November, 1879, I found myself in a beautiful spot nearly surrounded by mountains. The post is 6150 feet above sea level, the climate mild and delightful, but, to me at least, somewhat enervating. It took me three of four months to get quite used to the altitude.

I remember that on two or three occasions I spat a little blood and that for a time I had to be content with very little physical exercise on account of muscular weakness and shortness of breath. I remember how startled I was, upon attempting to chop some wood (an exercise to which I had been somewhat addicted), when seized by a painful contraction of the recti abdominales muscles. However, these are only common experiences of people who have ascended into high altitudes.

As I looked about the post, I was struck by the number of carcasses of cattle which were lying about drying up in the fine bright sunlight. I was told that these animals had perished from Texas fever or had been recently driven up from Texas and had died from the cold. I was told that the cattle who give the fever are themselves free from it. This remarkable statement was then generally accepted; but, as I suppose you are aware, it has been disproved by the researches of Smith and Kilbourne (Bulletin, No. 1, 1893, United States Department of Agriculture, Bureau of Animal Industry) and others. The cattle which bring the fever from the Gulf-coast counties of Texas, where it is endemic, are themselves sick with a chronic or sub-acute form of the disease, which, by reason of their acclimatization, does not seem to inconvenience them very much, nor does a change of climate apparently bring on a marked exacerbation of the fever. But their blood contains the microparasite of the disease, as proved by Smith and Kilbourne. Years ago Professor Law, I believe it was, pointed out that the southern Texas cattle have universally an enlargement of the spleen and a low grade of fever, and, while on their natural ranges, never get fat. Hence, for commercial reasons, they have to be driven away from the infected districts into northern pastures, where, after a time (so far as I know) not yet determined, their blood finally purges itself of the fever parasite, and their condition markedly improves. Like the poor and miserable of the human species, these beasts are prolific breeders; and, as there are no severe frosts in southern Texas to kill the calves, and as the grass flourishes all the year round, this part of the United States furnishes an especially favorable breeding ground for neat cattle.

As already stated, the specific cause of the Texas cattle fever is a micro-organism, which invades the blood discs in apparently the same manner in which the Plasmodium malariae invades the human blood corpuscles. The infection, we are told, is carried from the southern cattle (whose blood already contains the micro-organism) to the northern cattle by the cattle tick. This is a parasite which abounds freely in the South, and which attaches itself to the cattle and sucks their blood. It is dropped off along the ranges which they traverse and, attaching itself to any other cattle that may cross the same range, introduces the specific micro-organism into their blood. There the germ multiplies and produces the well-known symptoms of Texas fever in its new host.

This whole process reminds one strongly of Dr. Patrick Manson's theory with respect to the transmission of the malarial parasite by means of the intervention of the mosquito. In short, the whole history of Texas cattle fever reminds one strongly of malarial fever in man, and it is fair to presume that further elucidation of the biology of the specific parasite of the former disease will throw a strong side light upon some of the unexplained points in the life history of the specific germ of the latter.

The peculiarly forlorn appearance of the cattle just driven up from the Gulf-coast counties of Texas is quite striking, and the name applied to them—i. e., "dogies"—is a frequent term of contempt and ridicule bestowed upon people and things generally in Texas. These "dogies" will weigh, perhaps, six or eight hundred pounds. They have long, shaggy, rough coats, long heads with enormous horns, long tails, and small, ill-developed bodies. They are thin and badly nourished to a degree, and a large percentage of them will die at the first hard frost. Of a number of them driven into the Panhandle of Texas or New Mexico, perhaps half or two-thirds will live through the first winter. In the spring another trial awaits them, namely the heel fly, a pestiferous insect, which bites the poor beasts just above their hoofs and drives them at full speed into the nearest water. It is a curious and rather comical sight to see some staid old cow or solemn lanky steer, which had been quietly browsing, suddenly snort, lift up its tail, and start on a wild run for the nearest pool or stream. Once in the cold water it is free from its tormentor, but frequently the shock of the cold is so great that the animal cannot get out of the water, but falls down, and unless rescued soon dies, and many of those which are drawn out, after having been in the water for some time, succumb from the shock to their weakened systems. Fortunately, the onslaughts of the heel fly lasts only a few days. It is during the first warm days of early spring, before the ice is all gone from the streams and ponds, that this peculiar insect abounds.

If the cattle survive until the grass is fairly started, they soon begin to improve wonderfully, and by fall no one would recognize in the smooth, round, and well-grown cattle the wretched "dogies" of the previous season. Their increase of weight amounts to several hundred pounds the first year. But they were generally kept on the northern ranges two or three years before being driven to market, by which time they would about double in weight. If, however, they were driven to Oregon and other places considerably further north, they would in two or three years triple or even quadruple their weight, certainly a remarkable effect of a change of climate. It was commonly believed in the Texas Panhandle that, after a winter there, the southern cattle were again susceptible to Texas fever, and this had always been my own opinion. I see, however, that Drs. Smith and Kilbourne seriously question the truth of this opinion, and believe that the cattle, having once recovered from the fever, are probably subsequently immune. This very interesting point requires further study.

After a sharp frost there will be no further fever in northern Texas or New Mexico until another drove of southern cattle comes and brings the germs, and cattle suffering from the fever, if subjected to frost (if they are not killed by it), will soon recover from the fever. It is highly probable that the constant presence of Texas fever on the southern cattle ranges is the explanation of the poor condition of the cattle, but it is not likely that in that elevated temperature the cattle ever would get very fat if there were no fever there: It seems to require plenty of cold weather, as well as good food, to make fat cattle.

In respect to horses brought into New Mexico for the use of the troops, I noticed that they were nearly all afflicted at first with what seemed to be a sharp attack of ordinary distemper. These horses were largely bought for the government in Illinois, Iowa, and other middle Western States, and were transported by railroad to the point nearest to the post and then driven the rest of the way. (It so happened that nearly all of my stations were a considerable distance from the railroads.) The journey into the post had to be made with the utmost care. A little over exertion would kill the more severely affected of the horses. I remember that the animals were feverish and would not eat. Their coats were rough and lustreless, and some of them had swelling of the maxillary glands. In some cases these glands suppurated and had to be lanced, or even broke spontaneously. There seemed to be the same differences in the way this fever of acclimatization affected the horses that we noticed among the recruits. Some were very sick and a few died, while the majority were only slightly ill, and some of them showed no severity of symptoms at all—an interesting point, which indicates that animals also have the same varying susceptibility to disease that man has. After two or three months the horses seemed to be completely acclimatized, but it was a long time before they could endure as much hardship as the native animals, if, indeed, they ever did become so tough. I remember another curious thing about horses on those western ranges. After a long, cold winter, when they had had little to eat, they became completely covered with lice. A more disgusting and pitiable sight it is hard to imagine.

The acclimatization of Western horses brought to the Atlantic seaboard takes at least twelve months and often twice as long. This seems in many cases to be due to bronchial troubles, which the animals contract in our damp climate, and which are difficult to get rid of. I have a horse now that for two winters after I bought him coughed and discharged mucus freely from his nostrils, so much so that I supposed he had consumption. He has recovered completely, and I think that he is not only a better horse than when I got him, but a better horse than he ever would have become had he remained in Michigan, where he was foaled. I have no doubt that it is harder to acclimatize horses from the middle West upon the Atlantic seaboard than in the Rocky Mountains, on account of the greater severity and changeableness of the climate.

The only other animals which I had opportunities of observing after a change of climate were a few dogs, and they seemed to endure the changes well, thus sustaining their reputation of being able to live in a greater diversity of climates than any other animal except man. As to the effect upon the health of men and women generally of a change from the Atlantic States to New Mexico or Northern Texas, as a rule the effect was beneficial. Most of the men who came under my observation and who had changed their residence from the seaboard were recruits, and were young selected lives and better adapted to undergo vicissitudes of all sorts than people sent West for their health, and in that respect my observations would differ from those of observers who practice in the far West and see, for the most part, invalids who have been referred to them by Eastern practitioners.

(TO BE CONTINUED.)

Food Adulteration and the Pure Food Law.

Abstract of a Lecture delivered before the Franklin Institute, Philadelphia, February 5, 1897.—*The Journal*, April, 1897.

BY DR. LEE K. FREMKEL, MEMBER OF THE INSTITUTE.

(Continued from page 390)

In Pennsylvania the standard for cider vinegar is an acidity of 4 per cent, and 2 per cent of solids. Besides this practice, the sale of spirit vinegar, colored with caramel, for pure cider vinegar, is very common, and in fact until the enforcement of our stringent law, there was very litle pure cider vinegar on the market. White wine vinegar is likewise frequently a delusion. In its place there is sold the distilled vinegar obtained from grain. This grain or spirit vinegar, even when sold for what it is, is frequently adulterated by the addition of water. The vinegar law, as at present constituted, makes no standard for any vinegar other than cider vinegar, and hence it is impossible to define what constitutes a standard spirit vinegar. This feature of the law makes the entire statute very objectionable, and it is probable that at the present session of the Legislature a new law, drafted by Deputy Commissioner Moore, of the Food Department, will be introduced to remedy this evil.

Regarding wine and beer, but little can be said at present. In this State no standards have been set up as to what shall constitute the pure article. If beer and other malt beverages should consist solely of the product of malt and hops, then the addition of burnt sugar, licorice, treacle, quassia, coriander and caraway seed, cayenne pepper, soda, salicylic acid, salt, grains and other than barley malt, is certainly adulteration.

Wine has been adulterated from the very earliest times. It is hardly necessary for me to say that the same condition of affairs exists to-day. Fortification with alcohol, the use of coloring principles, the addition of acids, and even worse forms of adulteration —such as the addition of refuse matter that will ferment—are frequently resorted to. The entire subject of liquid food and nourishment offers a very fertile field for investigation by the authorities, and must eventually end in the framing of a law which will define what shall constitute adulterations in these articles.

Before bringing this lecture to a close, I trust you will allow me a few minutes for a discussion of the Pure Food Law as it exists in Pennsylvania. Nineteen months have passed since the law was framed, and in that time it has met supporters and detractors without number. Reputable merchants, as a rule, have given it their support and have endeavored to conduct their business according to its requirements. Of all the blows which have been leveled at it, possibly the worst, so far as immediate results are concerned, is the recent decision of Judge Hemphill, of Chester county, declaring the law unconstitutional. In order to appreciate this decision more thoroughly, permit me to quote a few passages of the act of June 26, 1895, entitled "An act to provide against the adulteration of food, and providing for the enforcement thereof." Section 1 of this act reads: "Be it enacted, etc., that no person shall, within this State, manufacture for sale, offer for sale or sell any article of food which is adulterated within the meaning of this act."

Section 2 reads: "The term food, as used herein, shall include all articles used for food or drink by man, whether simple, mixed or compound—"

Section 3 reads: "An article shall be deemed to be adulterated within the meaning of this act—

"(a) In the case of food: (1) If any substance or substances have been mixed with it so as to lower or depreciate or injuriously affect its quality, strength or purity. (2) If any inferior or cheaper substance or substances have been substituted wholly or in part for it. (3) If any valuable or necessary constituent or ingredient has been wholly or in part abstracted from it. (4) If it is an imitation of or is sold under the name of another article. (5) If it consists wholly or in part of a diseased, decomposed, putrid, infected, tainted or rotten animal or vegetable substance or article, whether manufactured or not, or in the case of milk, if it is the product of a diseased animal. (6) If it is colored, coated, polished or powdered, whereby damage or inferiority is concealed, or if by any means it is made to appear better or of greater value than it really is. (7) If it contains any added substance or ingredient which is poisonous or injurious to health: Provided, that the provisions of this act shall not apply to mixtures or compounds recognized as ordinary articles or ingredients of articles of food, if each and every package sold or offered for sale be distinctly labeled as mixtures or compounds and are not injurious to health."

Judge Hemphill's decision of the unconstitutionality of the law rested on Clause 2 of Section 3, which refers to the substitution wholly or in part of any inferior or cheaper substance for the food in question. The learned Judge contended that substitution was not the same as adulteration, and since there is no mention of substitution in the title of the act, the act violated the organic law of the Commonwealth, which requires the particulars of any section of an act to be nominated in the title. Unfortunately for the Pure Food Law, there is hardly any question that Judge Hemphill is correct from a legal standpoint, and the case offers but another illustration to many that have gone before of slipshod methods of legislation notwithstanding the presence of considerable legal talent in our Legislature. Unquestionably, this section of the act will require revision and amendment.

Possibly other sections may require similar treatment. For example, Section 2 states that "the term food as used herein shall include all articles used for food or drink by man." * * * This section is a counterpart of the English law on the subject, and yet in England it has been decided that under this clause baking powders could not be included. Judge Hawkins, in rendering his decision, stated that "the mere sale of an article, not in itself an article of food, even though it be sold in the knowledge of the vender, that it is the buyer's intention to mix with it the ingredients of which an article of food, e. g., bread, is to be composed, is no offense under Section 3, and it makes no difference, in a legal point of view, that when sold it is mixed with other ingredients not in themselves hurtful, some or one of which might in an unmixed state be used as articles or an article of food, if the injurious and harmful articles are so inseparably mixed and in such quantities as that the mixture as a whole forms an injurious compound which no one would dream of using as a food." Referring to the baking powder in dispute, Judge Hawkins said: "Who would venture to describe such a mixture (sodium bicarbonate, 20 per cent.; alum, 40 per cent.; ground rice, 40 per cent.), as the food of man? With equal truth might not powder composed of poison mixed with flour be called food for man because pure flour is used? Possibly it may be said that the injurious ingredients, when mixed with other materials of which an article of food is composed, becomes a part and parcel of such article, but that is no argument against the vender of such injurious ingredient, unless such injurious ingredient can be treated as an article of food at the time of the sale. That is the moment when the test of its character is to be applied, and if it is not then an article of food, no offense is committed by the vender of it, though the purchaser or any one who afterwards mixes it with an article of food intended for sale, would be guilty of an offense."

This is but one illustration, but it suffices to show that astute legal minds could possibly detect other flaws in our present law. For this reason, it is well that decisions such as Judge Hemphill's should see the light of day; for, while their immediate effect is baneful, their ultimate outcome will mean the revision of the law in such a form that it will be impregnable.

Aside from the possible flaws, the law as it stands has received opposition from other sources. The manufacturer, the dealer and the retailer has each, in his turn, found some clause that was obnoxious, some section that interfered with his business interests. Without going too minutely into details, it is conceded even by those who recognize the beneficial value of a pure food law for the honest tradesman, and notwithstanding the liberal policy that has been the invariable rule of the Dairy and Food Commissioner, that it is an impossibility to comply with the letter of the law in its present form. If it were the retailer only who complained, or the dealer, or the manufacturer, or any two of these, it might be supposed that any existing fault in the law would be special in its nature. The fact that the complaint is general, leads to the inference that the fault is organic.

To my mind, the inherent error of the law lies in the absence of a thought which should always be present in legislation of this kind, the underlying idea that a distinction must be made between adulteration that is the result of fraud or negligence and that which arises notwithstanding the fact that every possible precaution to prevent it has been exercised; in other words, the distinction between adulteration willfully and deliberately planned, and adulteration the result of an accident beyond the power of man to prevent. Countries older in food legislation than we are have recognized this distinction, and have incorporated in it their laws and even in the punishment imposed for their infraction. In Germany, for example, where every detail of food adulteration has been worked out to a nicety, and where the punishment imposed for the violation of the statutes is severe, the law distinguishes between adulteration prejudicial to health and that which is not. In the latter case, it is first necessary to establish guilty knowledge on the part of the vender before punishment can be imposed. Where substances injurious to health are used, punishment is imposed; and should death result from the use of such substances, the imprisonment may be for a term of five years. In the case, however, where the toxic nature of the substance was known to the vender, the punishment is imprisonment for ten years, and in case of the death of the user the seller may be imprisoned for life.

After what has been mentioned, it will hardly be profitable to discuss more thoroughly our food law or its administration. The authorities, as must be plainly seen, have no volition in the matter, but are compelled to enforce the law and to prosecute adulterations under the law, as defined in the act which regulates the duties of the Commissioner. Possibly no better proof of the inadequacy of the law could be given than the fact that, notwithstanding the exceptionally humane policy of the Commissioner, and his desire to be not only just but merciful in his decisions, the law has in several cases been a positive source of injury to unintentional offenders, who desired nothing more than to be honest and conscientious in their dealings.

But little more remains to be said. As to what shall constitute the responsibility of the State and the duty of the individual must be left for a more explicit law to decide. In general, it may be stated that the State must eventually recognize that its responsibility does not end with a mere police surveillance and the means necessary to accomplish this one function. It will finally be seen that it is within the province of the State to branch out on the broader lines of educating the community up to the standard which it imposes in its laws. That this will entail expense is without question, but this is a problem that will not admit of the consideration of cost. For the proper development of a food law much is needed—a competent corps of officials; a thorough-working system; an efficient and suitably constructed laboratory and appurtenances for the purposes of investigation and research; the dissemination of the results of these researches, so that they reach every individual interested; all these constitute the legitimate work of the State, and should be so recognized. When this is once accomplished, and when the law is so framed that the ethical idea of a distinction between deliberate and unintentional wrong-doing is incorporated as one of its bulwarks, on that day every one will acknowledge that a pure food law has more influence in protecting the health of the community, in benefiting trade, and in inculcating the doctrines of social and moral order, which are the mainstay of the State, than has any other statute in the laws of the Commonwealth.

The Morphine Habit, its Causation, Treatment, and the Possibility of its Cure.

By DR. S. W. ROBERTSON, of Cal.

THE undue use of morphine, either to relieve pain, or for the purpose of re-establishing normal tone to the nervous system, has become so common, and its abuse is so closely connected with the same predisposing causes that underlie all neuroses, that an inquiry into its symptomatology and treatment seems pertinent. Even of more interest is the study of its causation and the establishment of the fact that, in the great majority of cases, it is as much a result of the nervous heredity as is nerasthenia, insanity, epilepsy or dipsomania. By this is meant that morphomania belongs to the group of functional neuroses which has, as a basis, the nervous diathesis; and that, when a person possessing this constitution, even for a few times, experiences the pleasing exhilaration that opium brings, he not only becomes addicted to the drug, but, to such an extent, its slave, that he will sacrifice all in life that should restrain and stand between him and his appetite, and will barter honor, truth and all social considerations for the relief of the craving so soon established. As a rule, the morphomaniac receives but little sympathy and, while the world readily excuses those patients who become addicted to the habit because of pain, it harshly judges the equally unfortunate who have, as an excuse, hereditary compulsion.

Opium, either refined or in its crude state, together with its alkaloid morphine, is, of all drugs, the one most frequently selected for the purposes of intoxication. Taken either as an extract or an alkaloid, smoked, eaten or injected, its evil influences, over both body and mind, are soon established.

Opium smoking, so prevalent in China, is, to some extent, practiced in California, for every China-town in the State is a focus from which the infection spreads. As a rule, however, it is only the vicious and criminal who resort to these dens, and even this class soon discard the filthy and nauseous surroundings for the more seductive and less expensive needle. Opiophagia, or the eating of opium, while chiefly practiced in the Oriental countries, was, until recently, a most common vice in both Great Britain and the United States. Of all forms it is the easiest to conceal, and can be practiced for a certain time without detection even by the immediate family. Its effects do not seem so disastrous as do the other forms, and some observers claim increased powers of resistance and endurance from its moderate use.

The invention of the hypodermic needle, and the discovery of cocaine, have added greatly to the dangers of morphine. It is possible either to smoke or eat opium for a life-time and still not absolutely unfit a man for social life, but the hypodermic use of morphine connected, as it usually is, with cocaine, soon brings physical and mental disaster, and, in a little while, he becomes a burden either on his family or the public charities.

While the invariable excuse for the use of morphine is that it was originally taken on a physician's prescription, and for the relief of pain or some other illness that called for opium, yet, even after the cause is removed, the patient cannot relinquish the drug. Many authorities assert the causative influence of pain and, while it certainly may act as an exciting cause, yet, back of all this, is the question of heredity and the presence of a nervous diathesis. A normal individual, when freed from physical suffering, is often enabled to throw aside the drug, but, in the neurotic, this is not the case, and, when the disease is cured, a thousand hysterical pains spring up and demand the continuance of the drug.

The part that heredity plays in all functional diseases or states of the nervous system is not to be misunderstood. It is safe to assert that no idiopathic case of insanity, chorea, hysteria, megrim, dipsomania, or moral insanity, can occur except by reason of inherited predisposition; and the same family type may assume any of these psychoses, but which particular one will develop we cannot predict. It is not contended that morphinism is a physical disease such as epilepsy, for instance, but it is asserted that it has its origin in the same stalk, and while one develops naturally the other is most easily grafted. Take, for instance, a neurotic family. Its founders may be two individuals, neither of whom possesses a markedly nervous temperament, but both have similar nervous tendencies, and their conjoined effect is such that their children are typical neurotics. Or suppose the mother to be tubercular and the father an alcoholic, we have a resulting family, each individual member of which in time develops a neurosis. One child may be an idiot and the rest unduly precocious. Probably some of these children die early of tubercular complications, for precocity is but another name for scrofula. In youth one may develop epilepsy, another chorea, a third, megrim, while of those who escape the neuroses of development, many later break down when tried in the crucible of human endeavor and competition and fall by the wayside, either as hysterics or neurasthenics, or they possibly manifest the more active types of insanity. Very many of us escape all pitfalls and go through life possibly eminently successful, the nervous temperament even adding to our peculiar fitness for specialized work. It is from those possessing this highly developed nervous system that the genius and the man of strong character springs, as well as the crank and that other more confirmed class, the monomaniac and the moral idiot. Why one fails when others succeed is often due to some blot on the brain, some mental defect that clogs the machinery and unfits the sufferer from association with his fellow-beings, simply because of some slight but inexcusable moral weakness.

> "He rode a horse with wings that would have flown,
> But that his heavy rider kept him down."

To the alienist these all bear equally the marks of the neurotic stigmata. Too great concentration of energies and disposition in any one direction may result in an abnormal mentality, yet it is to those possessing this nervous force and energy that we owe much of the world's progress. It has been said that it is the crank that turns the world. It is not claimed that the possession of this temperament necessarily leads to the use of morphine, but it is certain that the possession of it strongly inclines to easy assumption of the habit; and that, when morphine's charms are once experienced, it is far more difficult to cure them, for they possess a hundred morbid ideas, desires and neurotic longings that the normal man cannot realize and which only a narcotic will satisfy. They take it, not because of pleasant dreams or intoxicating oblivion, but simply for the purpose of controlling or ballasting unstable nervous organization, neither asking forbidden pleasures nor undue exhilaration, only demanding that rest and peace which is the heritage of the normal man.

The symptoms characterizing the morphine habit all refer to an unstable nervous state of either the body or the mind. The bodily symptoms are emaciation, weakness, ataxia and paresis of the sphincters which Levinstein and other writers have included under the name of morphinism in contradistinction to morphinomania, under which term they include loss of will-power, moral insanity, imbecility and other mental perversions. For the first few months its use apparently gives mental strength and bodily vigor. The victim is exhilarated, moves with alacrity and life is full of zest hitherto unknown. Neurotic longings and physical infirmities are forgotten, and, for the first time, possibly, the patient experiences the sensation of being normal. He is certain of his own mastery and the honeymoon following the first knowledge of the drug is bliss unspeakable; not that visions such as De Quincy has familiarized us with are of usual occurrence, or that delusions and hallucinations are generally present. These may come with overdoses of the drug, but, at least in the early stages, are temporary. The patient, probably beginning with one-quarter grain used occasionally, soon adopts it as a daily habit, and rapidly increases it to four or five grains, later finding that excessive doses are necessary to produce the old-time effect, he becomes alarmed, and attempts to stop the drug. He reduces the morphine, and possibly resorts to alcohol as a stimulant, but the fight is a losing one, and while he may temporarily reduce the amount, he cannot throw aside the habit. Finally, thoroughly frightened, he seeks relief; probably takes some advertised cure and stoutly asserts his freedom, yet secretly indulges to a greater and greater extent, and despairing of morphine bringing any relief, gradually adds cocaine. When this stage is reached, all hope of unaided recovery goes. The patient grows more infirm, more debased physically and morally, until he becomes a pariah amongst his fellow men. The desire for reform is a real one, and they are willing to sacrifice everything they hold dear in life—except morphine—could they only recover.

When fully under the power and the first pleasurable sensations have disappeared, the bowels become constipated, relieved by occasional diarrhoea; the appetite diminishes, and the body emaciates. Frequently there is a paralysis of the sphincters, both rectal and vesical, and the heart becomes irritable with a frequent and compressible pulse. Venereal desire, at first increased by the drug, gradually lessens until mental masturbation takes the place of virile power. The skin is sallow, the eyes sunken, the face emaciated and expressionless, giving the well-known morphine facies, which, with an ataxic gait, constitute the main symptoms of morphinism. The morphinomaniac symptoms are equalil well marked. Its early effects are an increase of the mental power and ability to carry out life's routine, but, as soon as the habit becomes firmly established, and the patient after a few half-hearted attempts at abstinence, finds his only course one of concealment with increase of the drug, he loses all interest in his work and his former pleasures, and concentrates his whole energy on supplying himself with the opiate. He neglects business, no longer cares for social life, consorts with those similarly afflicted, and sinks into hopeless physical and mental decadence.

The effect of morphine upon the mind, whether for the relief of pain or because of natural inclination, is destructive; and no one can become its victim without lowering of moral tone and loss of will power. They may theorize as well as ever, but let a few hours elapse without their accustomed stimulant, and their unquiet nerves and uncontrollable longings cause them to jeopardize their souls for the drug, and there is no commandment in the decalogue they would not break to gain mental ease. No matter how honorable, upright and conscientious a man's past life may have been, let him become thoroughly addicted to morphine and I would not believe any statement he might make, either with reference to the use of the drug, or on any other subject that concerned his habit. This extends further and clouds his moral perceptions in all relations of life. Authorities even go further than this and claim imbecility with organic brain changes. My experience has been large, and while I cannot claim to speak authoritatively, yet my own observations do not confirm this statement. I do not deny occasional mental deficiency, yet while at Napa, and later when temporarily in charge of the Home for Inebriates, many morphine cases were committed as insane, yet not a single one exhibited either delusion or hallucination, and all were voluntarily committed for the purpose of cure. They showed no mental change on the day of their discharge, and they were all discharged "cured," differing from their condition on admission; yet, in the broader sense of the term, they were all insane, morally insane. They could not tell the truth; they were boasters, perhaps not so much in the belief that they would never relapse, as in detailing the amount of drug taken. They ridiculed any possibility of relapse, yet many left these institutions and hardly let the day elapse before they were back in their old haunts.

Briefly summarized, morphine does not produce active insanity. Unlike alcohol, which, when long and excessively continued, produces chronic pathological changes, morphine simply destroys the bloom of the mind, obtunds moral sensibility, and only when excessively used, produces temporary mental aberration.

The treatment of these cases is a most difficult matter, and my reason for dwelling on the nervous and mental state was to show the difficulty of caring properly for these patients, while they are allowed the slightest liberty of person or freedom of judgment. There is certainly no royal road to cure, no Soteria or other patent medicine that will in a night charm away desire. The only chance is in the slow and permanent upbuilding of the body, and the protection of the patient against himself, till his will power can reassert its old mastery.

To stop the drug is the first but not the most difficult step in treatment. Whether it be withdrawn quickly or gradually is a matter of indifference. Our books warn us against sudden withdrawal because of probable heart failure. My experience does not bear this out. Certainly fifty cases, many of them in extremis, were admitted to Napa, and it is fair to presume that when so radical a step was taken, their cases were considered desperate. In every instance they presented the same general appearance, an emaciated body, a haggard face—pale, drawn and expressionless, eyes lusterless and gait unsteady. They belonged to the dregs of society, and nearly all were graduates of the opium joints in Chinatown. We could never determine on what just grounds they were committed, as none presented any mental symptoms except of moral degradation. The invariable practice was to shut them in a small room after bathing and supplying fresh clothing. This was necessary because they always came with their own clothing lined with morphine powders. Within twenty-four hours they were in a state of frenzy, begging and pleading for relief. Soon they became bedfast, vomited and occasionally purged a viscid green bile, peculiar to this disease. Nothing either medicinally or dietetically was done for their relief. The breakfast consisted of mush, with syrup and fat bacon, and their other meals were equally unappetizing. From the sixth to the eighth day they rallied sufficiently to walk around the ward, and, in two weeks, were usually able to go out and relish their food. Within a month their appetite was voracious. The return to physical health was rapid, and, in from six weeks to two months, the patient was strong, robust and apparently in the full possession of both physical and mental health. They were loud, and possibly honest in their assertions of reform, but in no single case —with one exception—do I know that the patient did abstain. While death may follow any mode of treatment, our experience demonstrated that sudden withdrawal was not dangerous, even though it seemed heartless.

In private practice, the gradual reduction of the drug is the only procedure possible. The patient will not willingly endure the unnecessary suffering entailed by the sudden withdrawal. It is not a difficult matter to gradually reduce the drug from the daily five to ten grains to three-quarters of a grain within the first week, but it will probably take another week to reduce to one-quarter of a grain, and another week still to stop the drug altogether. It is not well to let the patient know when the drug is withdrawn, as the physical influence is strong, and the mind, as well as the body, demands treatment. Fortunately, we have remedies that greatly assist us in so strengtheneing the nervous system that it can successfully stand the shock of withdrawal --strychnia hypodermically and the red extract of cinchona internally, are excellent stimulants, and, while they are not altogether as beneficial as they are in alcoholism, yet they powerfully assist. In the lighter cases, especially where no cocaine has been used, the more serious evidences of shock, vomiting, rapid pulse and physical prostration may be slight. But where excessive and long-continued abuse has wrecked the system, they will be pronounced, and will continue more or less during the withdrawal. In fact, the rapidity of withdrawal is to be regulated by the severity of these symptoms.

The strychnia solution should be 1 to 200, and of this 10 minims can be used not less than twice, and possibly four or five times in the twenty-four hours. So specific is its action that the system can stand one-half grain without developing physiological symptoms should the necessity be great. With this, equal parts of red cinchona and fl. ext. cocoa are prescribed, of which one drachm may be taken two to four times daily. But with all this stimulation, the system is occasionally rebellious, and the nervous system so unstable that brom. potash is added. The object in giving it is to overcome the nervous paroxysms, and when it is necessary to resort to it it should be pushed to narcotism. In other words, 90 to 120 grains are daily given, and while bromism continues, the morphine may be fully and finally withdrawn. Even from the beginning of the treatment, the morphine is never given alone, but in connection with strychnia, and the patient must be kept in ignorance of the amount of drug taken, and especially of its final discontinuance. These excessive doses of strychnia and cinchona are to be decreased as rapidly as possible, and, by the end of the second week, their administration can be reduced to two daily,during the third week, to one,and discontinued in the second month, the strychnia to be again resorted to when symptoms demand it. The diet to be prescribed is, at least for the first two weeks, milk, to which, as the appetite returns, scraped steak is added, and later a generous diet. By the end of six weeks, the appetite is enormous and the body responds quickly. By the end of the second month the patient presents every evidence of health, and it is now that the difficult portion of the treatment begins. Before this, a special nurse has been necessary, and the patient has welcomed his companionship, but with returning strength, he resents surveillance, insists that his moral strength equals his physical, and, too often, persuades his friends that he is perfectly cured. But such cannot possibly be the case. Whether he stays under supervision, or goes home, the result is the same. By the end of the third month, he becomes restless, irritable, and is the prey to all the old-time neurotic longings. He still asserts his freedom from desire, yet, unless carefully watched, will resort to coffee, alcohol, or other and stronger stimulants. It may again be necessary to resort to strychnia and bromide, although not necessary to produce bromism. Until several such attacks have been successfully combatted, the patient remains in danger of backsliding. At my sanitarium, six months is the shortest time I will receive such a case, and the limit may be prolonged to twelve months. A shorter time invariably results in relapses, discouragement, and a return to hopeless slavery. For this reason the great majority never recover; but, where sufficient time has been successfully expended, and the neurotic taint is not too strong, reestablishment of the will power may proceed to such an extent as to overcome the lessening nervous outbreaks. Where there is no hereditary taint, and the diseases for which the morphine was originally prescribed can be cured, the prognosis is as hopeful as in cases of non-hereditary alcoholism; but the treatment, even in milder cases, must be of at least six months' duration. To discharge a patient at the end of the second month because his physical system is restored, is a waste of time and effort, and can only succeed in very exceptional cases. When the disease has affected the mind to such an extent that organic weakness is present, no treatment can benefit. Time, and protection of the patient against temptation till he is restored mentally as well as physically, is the only rational method of treatment.

It is estimated that the death rate of the world is sixty-seven a minute, and the birth rate seventy a minute, and this seemingly light percentage of gain is sufficient to give a net increase of population in a year of almost 1,200,000 souls.

THE ANNALS OF HYGIENE
PUBLISHED MONTHLY
SUBSCRIPTION TWO DOLLARS
A YEAR, IN ADVANCE
Address all communications to
HYGIENIC PUBLISHING COMPANY

EDITORIAL

All subscriptions to "THE ANNALS OF HYGIENE" are taken "until ordered discontinued," and no agent has authority to make any other arrangement. At end of time to which subscription has been paid or promised, a bill for a year in advance, with return envelope, is sent, and if journal is no longer wanted, the subscriber should mark "Discontinue" on the bill and return to us. A failure to so return bill is considered an order to continue.

COMMUNICATIONS SOLICITED.

We are always anxious to receive short communications—500 to 1000 words—on practical subjects pertaining to hygiene. To any one sending us an acceptable article, we will forward THE ANNALS OF HYGIENE for one year *free*.

Every day the mail brings to us a number of letters from interested subscribers, giving facts and bits of information, and asking our advice and help on many subjects. Their water supply, the plumbing in their houses, the pure food question, substitution and adulteration of drugs, the laws of health, the care of and proper food for children, cremation, whether this or that is a proper medicine, and the latest in use for certain diseases, etc. All these and many other questions are brought to us, until, strive as we may, many letters creep into our files unanswered. We are glad to receive these, to give help when possible and to see the intense interest shown in the subject of Hygiene. Also to note with satisfaction and happiness the growth by leaps and bounds among all our people of this great, useful, and necessary science. Hygiene is defined as "the subject which treats of health and the means for its preservation," and the definition leads us to ask if anything is greater, more useful, more necessary than this. The man or medicine that can cure you when you are sick is great, but the man or medicine that can keep you, or help to keep you from becoming sick, is greater. We expect to cover most of the ground in the course of the subscription year, but of course cannot present all subjects in the first issue of the Annals. We will gladly receive all letters and answer as soon as possible, but ask our subscribers to be lenient with us and wait patiently, to read the Annals thoroughly, to forward the cause in every way possible and help us forward it by presenting the Annals to their interested friends. We believe we have a glorious opportunity. Anything published in the Annals goes to subscribers in all parts of these United States, from Maine to Florida, from the Atlantic to the Pacific; therefore only the best is worthy of the Annals, and we shall strive to reach and keep this high standard.

MUNICIPAL HYGIENE.

London's Many Noises.

From the *Boston Herald.*

LONDON is the noisest city in the world. Yet it has no electric cars buzzing and crashing and din-donging through the streets! London's excesses in noise do not come from its street traffic. Its smooth wood pavement is the quietest thing yet devised for flooring a city, and rubber tires daily multiply. There are two classes of noisy vehicle, the omnibuses and the milk carts, but it is not the wagon wheel nor the wagon load that make London the noisest city in the world—it's the human voice and the human lung.

Anybody is free to make as much noise in London streets as he likes. He may sing, bawl, cry his wares, tootle on trumpets, and no one can prevent him. To his vocal exercises he may add the shrill clatter of the piano, organ, and the doleful drum, and none shall say him nay.

At this moment a German band splits the air about my windows. The fat trumpeters planted themselves before the house ten minutes ago, and their ferocious brass squealings have driven me from the chapter on which I was fondly engaged, having banished forever the struggling thoughts that were trying to get themselves into some inky shape.

When the strong-lunged fiends have blown out their repertoire they will move ten doors away and begin again. For an hour hence I shall hear them gurgling in the neighborhood, inciting all peaceable persons to shatter a commandment.

If the wretches would play well, some excuse could be found for their persistent energy; but they play vilely. All street bands do.

This identical group of harmony killers will come four nights out of the seven, and make night hideous.

An insolent ruffian with a fife is another terror in our street. You can hear him for half a mile. He will murder any tune he tries.

There's a varlet who comes at dinner time three nights a week to yell "Sweet Marie" and "The Jewel of Asia." I prophesy sudden death for this man.

It is impossible nowadays for any light sleeper to snatch forty winks in an afternoon. There are some lucky creatures who have such stout nerves that they could sleep through the slaughter of their parish or through devastation by earthquake; but persons thus blessed become fewer and fewer as civilization becomes more acute. Any metropolitan doctor will tell you that nervous diseases are becoming deplorably common. What are invalids to do when the blatant Teutons come bellowing under their bedrooms? You can go into the street and command the clamorous musicians to move on if there is illness in your house, and you can give the wretches in charge if they don't obey; but suppose they move a hundred yards! Their mighty blasts still roll along the street. They can go around the corner. They perambulate all the adjacent passages, and keep within the law and your hearing at the same time. You are defenceless.

There's a cornet blower who comes o' Saturday nights and performs an hour by the clock. He's the vilest knave at the business I ever encountered. He hasn't missed a Saturday for seven years, and he hasn't changed his tune.

If once a week were all—but it is not! There's not a quiet hour from 9 in the morning till past midnight. The alleged musicians stop their odious performances before midnight. Whether it is law or exhaustion that compels them I have never discovered.

When they have passed, the inebriated coster and the roisterous apprentice go home roaring. They come almost invariably in fours, and howling at the top of their voices. They stand on the street corners and howl unintelligible things. When a low-class Londoner is filled with drink he bursts into song and kicks his womankind. Law can touch him for the latter diversion, but not for the former; and yet the fellow's singing is as brutal as his kicking. His bacchanalian ditties are as clamorous as the "yawp" of Walt Whitman's steam calliope. You need expect no sleep till this multitudinous fool has gone to bed.

There is another terror beloved of a certain kind of cockney, and it is never, by any chance, rampant in the daytime. A young coster, having finished his labor and completed the joyous rite of "jumping on his mother," marches through the streets squeezing the air from a concertina. He is accompanied by a group of admiring friends, never less than six in number. They march heavily, these gallant Britons. You hear their boot heels keeping time to the shrill instrument. Now and then they whistle a chorus. More frequently they yell it. Where they march from, and where they march to, no man knoweth. I know only that their nightly processions torture my ears.

No policeman ever interferes with these revelers of the night. The bluecoat has no authority for repressing the ardent choristers; for the police may not "interfere with the liberty of the subject," and "the liberty of the subject" means that any fellow is permitted to make as much noise as he likes when quiet folk would be sleeping.

The singing beggars are the most odious of London's street nuisances. They are always greasy, shiny, whiny, and out of tune. For the most part they sing hymns, but no pen can tell you how they sing them; no words can convey the utter hypocrisy of their sneaking manners. They are as bad a lot as you could find the world over. They trade chiefly on the sympathy of the stranger and the credulous townsman. They trade profitably, too, more's the pity. One of them died the other day and left $1,000 cash at his lodging.

Begging is forbidden by law. To stand in the street and ask for alms is a crime, but to shuffle along the street whining in sharps and flats is to become an industrious subject. It is the law that forces these repulsive impostors to make a noise. There is nothing more detestable than a pair of these ingrates dragging their slow feet along the muddy roads, rolling their eyes, and screeching "Jesus, Lover of My Soul!"

After their nightly performances they repair to low gin shops, brawl and plan larcenies, which they execute on the way home. It's a wonderful wise thing, is the law!

(TO BE CONTINUED.)

Dangers of Illuminating Gas.

From "*Medicine*"

The frightful loss of life following the explosion of gas in one of the streets of Boston emphasizes the necessity of having some kind of regulation of the manufacture and distribution of gas. The Canadian Medical Journal for March, 1897, calls attention editorially to some of these dangers, which have so greatly increased since the introduction of water gas. In 1885 the State Board of Health of Massachusetts collected and published a large amount of valuable information on this subject. In reply to a circular issued to 189 cities it transpired that forty-five cases of fatal poisoning had occurred in seven and a half years in cities using the then newly invented water-gas, against forty cases in twenty-one years in cities using coal-gas. Experiments as to the relative lethal effects of the two gases were also made by placing some dogs, cats, rabbits, etc., in two separate rooms, alike in size and all other respects, and furnished with gas-burners of equal delivering capacity, the only difference being that into one room water-gas was introduced through the burner, and into the other coal-gas. In the room with the water-gas deaths began to occur in three hours, and all were dead in eight hours; in the other, all were alive and capable of being aroused in eight hours, and even in twenty-four hours only two were dead. A very important clinical point is that in a hotel or other dwelling a person subjected to the influence of gas from coal would generally be discovered before this more slowly acting gas had placed him beyond the power of recovery; whereas water-gas acts so much more rapidly that a person is frequently dead or beyond hope when the accident is noticed.

The causes of accidents are grouped under six heads: (1) The character of the illuminating gas. (2) Inadvertence in extinguishing it; blowing it out, or turning it out and then inadvertently turning it on again. (3) Defective burners, in which the stop pin has dropped out or worn off, or in which it turns below the shoulder. (4) Burners in which the tap turns too easily, and allows of a slight touch turning it back the wrong way. (5) The absence of automatic burners. (6) The practice sometimes adopted in hotels of turning the gas off at the meter at midnight, and turning it on again in the morning for the use of the servants, some hours before guests are discovered asphyxiated.

As regards precautions against these causes, it is a question for jurists and legislators to consider to what extent a corporation, for the financial benefit of its members, subscribers, or even customers, should be permitted to supply a dangerously poisonous compound, or whether persons who have not used due skill, care, and caution, or who may be somnambulists, or sleepily stupid on retiring, should be liable to the death penalty, in order not to disturb the best financial results. It does not seem unreasonable, at any rate, that those who manufacture and supply the poisonous gas should shoulder a large portion of the responsibility of seeing that the individual user for the time being is so circumstanced that the danger may be at a minimum The inspector who comes to see how much gas has been burned might also rapidly inspect each gas fixture, spot defective burners, and see that sliding chandeliers have not gone dry. He need not necessarily inspect every burner each quarter; in private houses especially he will soon know where frequent inspection is unnecessary.

Many hotelkeepers take great care to post printed instructions, and also to warn guests whom they suppose unaccustomed to gas fixtures.

Defective burners may be obviated by a periodical inspection by some official of the gas company or of the health department.

Some gas-burners have been invented by which the flow of gas is cut off in the absence of the heat of the gas flame Sufficient effort and observation in connection with the use of them is still wanting on the part of executive health authorities.

The practice referred to above ought to be stopped, so far as public houses are concerned, by municipal action. The object is sometimes economy, sometimes a mistaken effort to avoid accidents.

Although ventilation by fanlights. is, in some cases, objectionable, yet until some method of insuring against the escape of unburned gas is in operation, it would be desirable to insist that every room in a hotel should be provided with an opening above the door, so that the odor of escaping gas may be detected; and that the management of the hotel should by a lock keep these fanlight openings unclosed, unless a guest (who may prefer to get his supply of breathing air fresh from outdoors) specially requests them closed, and the management is convinced that he is possessed of the necessary qualifications to insure against an escape of unburned gas.—From "Medicine."

(Although we feel that the last suggestion goes too far, and is an unwarranted interference with the rights of an individual, yet the article as a whole points out a rapidly increasing danger of urban life and one that is too much neglected by sanitarians and legislators..)

Poisoning by Illuminating Gas.

J. E. Graham, M. D., L. R. C. P., London, in the Canada Lancet, reports two cases of poisoning by illuminating gas, one of which terminated fatally. After reviewing their histories, the symptoms and pathology of such conditions, he gives the following course of treatment:

"The first and most important part of the early treatment is to free the system in every way of gas. It may be expelled from the respiratory tract and lungs by first moving the patient to a pure atmosphere, and then practising artificial respiration so long as any odor of gas remains on the breath. In some cases artificial repiration has been kept up intermittently for hours with good results. It is quite probable that during the stupor which follows gas poisoning the 'besoin de respirer' is not so marked as in health, and that artificial respiration is necessary for the complete oxygenation of the blood. The utility of the administration of oxygen gas has been doubted by many. The combination of the haemoglobin with C O is so strong that it is not displaced by the oxygen, and it is generally thought that forced respiration is quite as beneficial as the administration of oxygen. It will be noticed that in the cases reported the elder and stronger of the two did not vomit and afterwords succumbed; while the younger and weaker patient vomited when she was removed from the bedroom, and, after a long period of unconsciousness, recovered. As both patients were subjected to the same amount of poison, it might be considered that the vomiting saved the younger and weaker patient. I think it more likely, however, that perhaps from a peculiar idiosyncrasy the elder was from the first more affected by the gas, and on that account did not vomit. The vomited matter, however, had a strong odor of gas, a fact which would go to prove that in this way the system had been freed from a certain amount of poison. It would, therefore, be advisable to empty the stomach and bowels as soon as possible. A tube might be used in washing out the stomach, and large hot water enemata might be given per rectum.

"On account of the combination of the haemoglobin and the C O, some physicians have bled the patients, thus freeing the circulatory system of a large amount of poison. At the same time a normal saline solution may be introduced into the veins. This practice has been followed by good results, and could easily be carried out in severe cases. The weak pulse would appear to be at first a counter indication, but when it is considered that the weak pulse results from a heart muscle weakened by poison, the seeming objection is removed. The more rapidly the circulatory system is freed from poison, the sooner will the myocardium resume its tone.

"In one case reported, the injection of a small amount of saline solution appeared to have a good effect. In the following case a fatal result occurred, notwithstanding all these remedies.

"Having freed the system as rapidly as possible from gas, the next indication for treatment would be to support the system, and to assist elimination of poison by the kidneys and bowels. The cardiac weakness, which is such a pronounced feature, is best counteracted by strychnine, which may be given hypodermically. Nitroglycerine has been strongly recommended as a cardiac stimulant, and together with strychnine was given by Dr. Willoughby from the commencement in the cases mentioned. Caffein appeared also to have a good effect, especially on the patient who recovered.

At the same time milk may be given freely. It is probable that it would be more readily digested if given in a peptonized form. The administrations of a normal saline solution were of great benefit in these cases. The kidneys are the great eliminating organs, and the marked increase in the quantity of urine excreted must have had a decided effect in freeing the system of toxines. It would appear from the protracted course of these cases that toxines are formed in large quantities from the disintegration of the proteid compounds, and the presence of those are a source of danger.

"Care should be taken that the body is not chilled, so that the kidneys are guarded from congestion. This warning is often necessary, because in the free admission of fresh air the temperature of the room may be too much lowered. In some cases it is necessary to have resource to water bottles to keep the extremities up to the normal temperature."

Vital Statistics of Large Cities.

Glancing over the volume of vital statistics of the census of 1890, of the twenty-eight cities in the United States which in 1890 had each a population of 100,000 and over, and an aggregate of 9,697,960, the total number of deaths registered of this population during the census year was 209,653; 21.62 to each 1000 inhabitants. Eight of the twenty-eight cities had a higher death rate than this, while Philadelphia falls a fraction below the average with a death rate of 21.29 per 1000.

The variation in the death rate in the six large cities on the Atlantic coast has varied greatly in the sixteen years between 1875 and 1890 inclusive. These cities are Boston, New York, Brooklyn, Philadelphia, Baltimore and Washington. During this period Boston's highest death rate occurred in 1875, when it reached 30.05 per 1000 of population. Philadelphia's maximum occurred in 1876, the hot Centennial year, when 24.44 deaths per 1000 of population were recorded; and its minimum rate happened in 1879, when the death rate of 18.69 deaths to each 1000 was recorded. No other large city on the Atlantic coast showed so low a death rate as this between 1875 and 1890. New York's highest death rate was 31.30 in 1881, and its lowest 23.39 in 1877. But the wildest variation in the death rate was in Boston, where it ranged from 30.05 per 1000 of inhabitants in 1875 down to 21.16 in 1879.

The relation of mortality to the seasons shows that—taking the nine cities, Boston, New York, Brooklyn, Philadelphia, Balti-Washington, Cincinnati, Chicago and St. Louis—for all ages January is the most unhealthful month and November the most healthful when measured by the number of deaths. The average death rate in these cities was 28.31 per each 1000 inhabitants in the first month and in the second month 16.40 per each 1000. For children under five years of age, July, with a death rate of 132.75, was the most fatal month, and November the least fatal.

Of suicides in these nine cities, the percentage was greater among barbers and hairdressers than among people engaged in any other occupation, the rate being 52.85 per 1000 deaths from all causes. The next largest percentage was among saloonkeepers, bartenders and tailors. The class of people least inclined to suicide appear to be draymen, hackmen and teamsters, the percentage among them being only 3.19 per 1000 deaths from all causes.

Old age is credited with 3,149 deaths in the twenty-eight largest cities during the year. The death rate per 100,000 of population 60 years and over was 657.83 in Philadelphia, 684.66 in Boston, 566.92 in New York, 613.12 in Baltimore and 664.47 in Chicago. This death rate is larger among the colored population than among the white. The highest was in Louisville, where the rate was 76.34 and the lowest in St. Louis, with a rate of 6.64.

Public Spitting.

Could every layman who walks the streets of the different cities of these United States and with reckless abandon deposits his salivary secretion wherever and whenever his convenience dictates, be afforded one or more opportunities of looking at his sputa under the microscope, and at the same time be instructed as to the virulence and menace to health of the germ often seen contained therein, we are sure that the most of the aforementioned good citizens would promptly recognize the importance and necessity of a more careful regard to the proper disposal of their expectorations, thereby tending to conserve the health of their fellow-townsmen.

Purer Water Supply.

At the last session of the State Legislature Cincinnati was given power to issue $6,000,000 in bonds to secure a new and purer water supply and improved water-works. The expenditure of this money was to be placed in the hands of a commission of five members. According to the Lancet-Clinic, this commission, which has been recently appointed by Governor Bushnell, is made up as follows: First, a printer, a successful politician, but with no knowledge of sanitary science; second, a steamboat captain, who has similar qualifications for the position to those of the first member; third, a distiller, of whom it may be written "ditto;" fourth, a newspaper publisher, an excellent man, but a cripple, who has thus far never posed as an exponent of sanitary science; fifthly, and worst, a notorious quack doctor, whose appointment is a direct insult to the medical profession. It is a pity that Governor Bushnell, in appointing a body of men into whose hands is absolutely cast the health of a great city, should not feel the necessity to appoint men who knew something of the highly important subject involved.—Cleveland Journal of Medicine.

Dangers of Sanitary Neglect at the Water Sheds from which come Supplies of City Water.*

By Professor W. P. Mason, of Rensselaer Polytechnic Institute, Troy, N. Y.

EVERYBODY is talking or writing about water, but the public is far from being well posted. Ocular evidence of purity is popularly sufficient. The bright and limpid water from the well which drains a graveyard is quite satisfactory to those who would shudder over a cholera ship's touching at our most distant port. The $5,000 just voted at Albany, N. Y., for studying the bubonic plague were better expended toward getting a pure water supply for that city.

---

*Abstract of a recent lecture before the Franklin Institute, Philadelphia.—The Sanitarium.

A letter written me says: "Water taken midway between the surface and bottom of a river will always be found as pure as fresh spring water. Impurities on the surface will be blown ashore in a few hours, while those heavier than the water will sink to the bottom."

Highly desirable as it would be to keep the waters of our great rivers in potable purity, the enormous expense would be prohibitory, apart from considerations of great injustice to established institutions. Large centres of population now in existence turn their sewage directly into the river on whose banks they stand, and an up-stream city might well complain should it be forced at great expense to establish sewage disposal plants when the town below for much less money could secure purer water from some inland source.

A land should be looked upon as watered by its smaller lakes, its springs and brooks, and sewered by its great streams, especially by its navigable rivers. Its water sources should be protected by law with exceeding care, and no river or stream should be added to its list of drains except after proper consideration by a State Board of Health, followed by legislative permission.

The typhoid fever outbreak at Plymouth, Pa., showed the direct relation between epidemic disease and a polluted water supply. It was traced to a single typhoid patient whose dejecta were thrown out upon the snow upon a hillside at whose base ran the stream supplying the town. The dejecta were frozen solid for weeks, but the March thaws dissolved and carried them into the stream below. Pruden long since showed that typhoid bacilli can survive three months' continuous freezing; while a more recent authority finds germ life standing the temperature of liquid oxygen, 298 degrees below zero, Fahrenheit.

The Massachusetts State Board of Health by a series of experiments at Lawrence, has determined that through intermittent filtration with beds of gravel or sand city sewage may be converted into potable water.

On many a farm and within the limits of many a town, human dejecta are disposed of in a vault or cesspool, and the purifying power of the earth depended upon to prevent pollution of the family well or of the adjacent stream. The distance from cesspool to well is often so short that the intervening soil has not the capacity to eliminate the amount of filth present, even by a process which must be essentially a continuous rather than an intermittent form of filtration. An elaborate series of analyses of the earth in the immediate vicinity of a cesspool showed that pollution extended to at least fifty feet from the cesspool.

In New York State the occurrence of typhoid fever cases in country, as compared with city, have been in the ratio of 33 to 24.

The average annual death-rates for thirteen Massachusetts cities stand, before introduction of public water supply, 79.04 per 100,000; after such introduction, 38.03. For the whole State of Connecticut, the percentage of typhoid deaths to total deaths had fallen from 5.08 in 1870 to 1.84 in 1893. Such figures show the advantage of selecting water supplies over the general run of those derived from the domestic well.

PROPER CARE OF WATERSHEDS.

The proper care of the watershed is as necessary as it is unusual. Such care should extend even to protecting the ground water for a considerable distance before it enters the feeding brooks of a district.

The larger cities of our country construct aqueducts, conveying the water from collecting to distributing point, under circumstances usually precluding the introduction of sewage material. Such handling is not universal—open channelways are quite commonly seen, and care is not always taken to prevent pollution during the water's flow.

The cholera epidemic at Messina, Sicily, in 1887, lasted from September 10 to October 25,totaling 5,000 cases and 2,200 deaths. The government instituted an examination of the water supply. It left the mountain gathering grounds of excellent quality, but was conveyed to the city in an open conduit, and favoring the Messina washerwomen, who wash outdoors, a portion of the public water was deflected before reaching the wells and taken into neighboring wash pools. A very fair proportion, after having cleansed the soiled linen of the inhabitants, found its way back again into the conduit, and continued its course to the city. Further contamination occurred in the city, the mains being of unglazed tiles, very leaky, with the sewers running frequently atop of the water mains. The government sent tank ships to the mains, filled them with pure water, the people drank thereof, the cholera cases fell immediately from seventy to five. An entirely new and efficient distributive system has since been introduced, and the city has escaped further cholera visitation.

ORIGIN OF TYPHOID FEVER.

Two conceptions of the origin of typhoid fever are held by opposing schools of bacteriologists: That the typhoid germ is always the offspring of a bacillus of its own kind; the other, that the progenitor in question is often a saprophyte, which takes on its pathogenic properties by cultivation through successive generations under favorable conditions. Army officers view with favor the theory of the saprophytic origin from some germs in the soil. The presence of filth and the production of disease are very closely related.

The public at large have an abiding faith in the efficiency of self-purification of running streams beyond the ability of science to remove. The bacterium does not suffer in efficiency even though the oxygen be reduced greatly below the normal supply. Sedimentation plays a part in general purification during open flow; but it is only a small one.

The sum total of self-purification occurring during the flow of an open stream is so insufficient as to permit of the carriage of infection for many miles toward the sea.

In drawing a water supply from a large lake, sedimentation becomes of prime importance, as the element of time enters very largely into these cases. Sedimentary deposits of polluting materials should not be disturbed after settlement, for they may retain their objectionable properties long after they have separated from the water levels above them.

In lakes the surface water cools down in autumn, and toward the verge of winter a temperature would be attained increasing its gravity beyond that of the lower layer on which it floated. When this point is reached vertical circulation is established and the lake turned over. With the advent of freezing weather a second stratification would ensue. The warm sun of April would inaugurate a summer stagnation again. It is advisable to avoid drawing the supply from a stagnant layer, especially with the same resting upon a dirty bottom. Clean water, stored in clean reservoirs, must form layers, of course; but the bottom portions may be used as freely as those nearer the surface. When the periodical turnover takes place, the water which has rested upon a dirty bottom starts upon its forward course, diffusing throughout the entire lake materials it has received during its rest. Much plant food is distributed through the upper waters, and the growth and decay of these waters cause the unpleasant taste so often met with in our city supplies.

CLEANING OF STORAGE PONDS.

The cleaning of storage ponds, it has been said, is all a mistake, and that it would be far better to leave the vegetable debris and add to the accumulation rather than diminish it. Comparative experiments upon reservoirs have shown, however, that improved water unquestionably follows cleaning, and it must be remembered that while good water may be obtained from swamp sources, where vigorous growth disposes of the products of decay, beyond question the reverse obtains under conditions permitting the products of decomposition to accumulate. The bottom of a prepared reservoir should be cleaned of all varieties of vegetable matter. Decomposition of recently killed vegetation takes place quite rapidly at first under water, but afterward proceeds with great slowness.

A reservoir with gently sloping sides furnishes favorable conditions for contaminated water supply. Such sides permit thin layers of water to be overheated by the summer's sun, thus favoring the growth of aquatic and land plants, which subsequently decay and damage the water.

Great trouble with the water supply (New York and Croton supply line) arose at Purdy Station from the fact that they had not disposed of the grass of the farms covered with water. They removed the trees, but did not remove the stumps or plow the grass lands, and when the latter were flooded and again exposed the stench was so tremendous that it nearly drove the Purdyites out of town.

Waters from underground sources should be distributed as soon as possible after being brought to the surface. As they are commonly well supplied with plant food in solution and under the influence of light and air there is danger of the development of algae if much exposure to these elements be allowed.

Sedimentation—suspended impurities—is of two sources, one arising from the impounding of surface water. Bacteria die slowly, and although a large percentage will disappear through storage, they are very long in settling, so that it should not be expected that a reservoir could do the work that could be accomplished by a filter.

With reference to the influence of precipitating mud—if the water be roily—let us take one roily and one not, but each containing the same number of bacteria per cubic centimeter. The one that is roily or muddy will, during the same length of storage, improve the more so far as its bacterial contents are concerned. The precipitated mud acts as a carrier of these bacteria and drags them down as it falls.

I have seen water pipes in direct contact with sewage, and in one instance the main of a large city street actually cut through the sewer. Fears are allayed by the argument that the pressure of water in the pipe would surely cause a flow outward, not inward, in the event of a rupture. With the operation of the Richards pump before us (depending on the power of rapidly moving water to suck air in through a side tube), the promise is that should such rupture occur the result might be most unhappy.

WATER SHOULD BE FILTERED.

It is the common American practice to deliver water raw to the consumer. Even when its purity is unquestioned, such is not the European custom; public sentiment practically demands that surface waters should receive sufficient purification before distribution for domestic uses. In Germany this matter is regulated by statutory law. Filters are established to filter waters equal in natural purity to the best supplies America can show.

Americans of Albany, Pittsburg or Chicago scrutinize the water offered them in foreign capitals, when what they are habituated to drink at home would not be tolerated in the great cities of Europe. The day is past when we can feel a sense of superiority over the Old World because of the magnitude and consequent initial superiority of our sources of water supply. Europe has lately expended much to better her water supplies, while we have forgotten that our populations and industries have been growing, and that the rivers our fathers drank from with safety have become charged with the refuse of up-stream communities.

To abandon an existing water-supply system, or to purify a polluted water, always involves the outlay of much money, and the taxpayer has a right to inquire whether the cash is fairly expended. No better measure can be furnished of the wholesomeness of a water supply than the actual list of typhoid fever cases in the community supplied. The means of prevention in the shape of great public works are expensive, and the question is asked: Do these works pay? Can we afford to save the typhoid victims?

According to Rochard the economic value of an individual is what he has cost his family, the community or the State for his living, development and education. It is the loan which the individual has made him by his relatives and the State in order to reach the age when he can restore it by his labor. Chadwick considers an English laborer equivalent to a permanent deposit of $980; Farr gives $780 as the average value of each human life in England. The French soldier is rated at $1,200. In view of the fact that typhoid fever selects by far the greatest number of its victims from among those in the very prime of life, to the relative exclusion of the very young and the very old, it will be reasonable to place the loss caused the community by a death from typhoid fever at $2,000. This is less than half the figure so frequently referred to in the courts of New York State as the value of a human life.

COST OF TYPHOID FEVER.

The average annual typhoid fever deaths in Philadelphia from 1890 to 1894 was 523, which, at $2,000, would mean an annual loss to Philadelphia of $1,046,000. Funeral expenses are estimated at $26 to $30. Should we accept $25, this would cost $13,075, thus raising the total direct loss through death to $1,059,075. But typhoid fever does not always kill. The percentage of recoveries varies in different places different years. The Montreal rate for eleven years is about 11.02 per cent., with sundry other places as high as 19 plus, and in other years 6 plus; but call the recoveries 10 per cent. Should we estimate nine recoveries to each death from the disease, and place forty-three days as the period of convalescence—the period during which a man is not receiving any wages—we should have to add to the 523 deaths from typhoid fever in your hospitals here in Philadelphia a term of 202,401 days as representing the time lost per day by the 4,707 persons who have the fever and recover. Thus, an annual loss of over 554 years has to be borne by the city's capital of productive labor. This, translated into the money value, should be added to the death loss. Fixing the wages at $1 per individual per day—which is a very low figure—there is a loss of $43 of wages for each recovery, or a total yearly loss for the city from this item of $202,401. Nursing and doctors' bills equal at least $25 per case, adding, further, $130,750. Expressed in tabular form, this yearly tax imposed by typhoid fever would stand:

Deaths, 523, at $2,000 each	$1,046,000
Funerals, 523	13,075
Wages of 4,704 convalescents during forty-three days,	202,401
Nursing and doctor's bills of 5,230 cases at $25	130,750
Total annual tax levied by typhoid fever upon the city of Philadelphia	$1,392,226

Public works, which would eliminate a reasonable fraction of this great tax, would certainly pay for themselves in the course of a few years, even though they were expensive.

Suppose the trolley system was so badly managed that 523 human lives were crushed out annually and some 4,704 other persons were more or less seriously injured, do you suppose the people of Philadelphia would tolerate such a state of affairs, or would grudge the necessary amount of money to stop such carnage? Surely not! Yet they are submitting to just such an amount of loss; only that it comes in a way less shocking. There is no community but can well afford to introduce a filtration system, however costly, rather than longer incur the risk of typhoid fever that must inevitably result without improvement.

Certain suits are now pending in the West to recover for loss of life by typhoid fever contracted by impure water, where it is shown that the public water is seriously polluted by sewage, and therefore an active source of disease. Fancy what would ensue if these cases were decided favorably! Cheap water may be at times a poor investment, and such would be the decision of the Water Commissioners of various communities in the event of damage awards for typhoid fever deaths.

Water coming from a great altitude, giving it great head or pressure, has been sprayed from the feed pipe into the reservoir so as to thoroughly oxygenate it.

EFFECTS OF CONTAMINATED WATER.

The River Tees, seventy miles long, in the northern part of England, runs through towns with plenty of opportunity for contamination. There are hundreds of outhouses discharging into the river underneath, and during dry weather there is quite an accumulation of it running down through a number of towns. About 280,000 people drink that water at the different stations all the way down, while about the same population do not, being situated (though in the same sanitary district) so as to take their water supply from other sources—making a pretty good chance for comparison. The Tees is subject to sudden floods, and during a flood, preceded by a heavy rain, that material is all washed down stream and goes into the intakes below. Every heavy rain produces typhoid fever—a marked increase in the rate—among the Tees water drinkers, while their fellow-townpeople, drinking from other supplies, have no typhoid fever increase amounting to anything.

You say: "How did our forefathers get along without these sanitary arrangements?" A chart of the death rate of London from the beginning of the seventeenth century to date shows, among other things, that from 1660 to 1679 the death rate was 80; in 1888 it was 18.

There is an intake for the Schenectady water supply from the Upper Hudson, above the junction with the Mohawk; West Troy takes Mohawk water; Lansingburg takes its supply from the hills; Troy takes Hudson water above the Mohawk; Albany, right on a hill, cuts a hole in its wharf and gets not only up-stream sewage, but its own. Typhoid fever broke out and started down the Mohawk. Every town that took Mohawk water or Hudson River water after the Mohawk joined it had typhoid; but every town which took Hudson River water above the junction of the

Mohawk or got its water from other entirely different sources, had no typhoid.

London filters every drop of water it uses, with the exception of a small amount that comes from wells. Its sand filters are underdrained by tiling. The water goes through coarse stone, then through gravel, then coarse sand, with a deep layer of fine sand.

The sand, roughly speaking, is about the size of mortar sand. The water comes through and leave its deposit on the upper layer, the sediment being removed with short shovels. After the amount of accumulated material has become so great that the water will no longer go through at the proper rate of speed, they put a gang of men on it and lift that dirt with short shovels. The first can almost be rolled up like a blanket. Its texture is firm; it is bound together by a gelatinous material deposited there by the bacterial agency.

How Diphtheria is Often Spread.

The following notice occupied a prominent place in a recent issue of one of the leading daily papers of Cleveland:

"Death of ———, the six-year-old son of ———, of——— avenue; died yesterday morning at 7 o'clock. He was in his Sunday-school class only a week before he died. The first of last week he contracted a severe cold and developed a bad case of membranous croup. Mr. ——— is a salesman in a business house, and both Mr. and Mrs. ——— are members of the ——— church. The funeral will be held to-morrow afternoon at 2 o'clock. Rev. ——— will officiate."

Only two months ago a public funeral in Cleveland was held over a child who died of "membranous croup," and one week later another child in the same family, ill at the time of the funeral, died of "diphtheria."

In Wilkesbarre, Pa., the wife of a citizen died of diphtheria and a public funeral was held, which was conducted by a well-known undertaker. The funeral was held in a church and largely attended. The health officers promptly and very properly arrested the husband and the funeral director for the violation of the State law which prohibits public funerals in such cases.

HYGIENE IN THE STATE.

The Relation of Impure Water to Disease.

A DISCUSSION upon impure water was held at the annual meeting of the Medical Society of the State of New York, on January 28, 1897. It was organized by Dr. Henry Hun, who rightly considered that, as the water supply is a subject of anxious consideration in most of our cities, a review of the many important and well-established facts which the investigation of this subject for the past twenty years has demonstrated would be of practical use. The papers read at this meeting are published in a special double number of the Albany Medical Annals, and from them we have selected the following extracts:

Among the sources of contamination of water, attention is called to the apparent innocence of water derived from uninhabited regions as compared with that from inhabited tracts. This is due to the fact that the great majority of pathogenic bacteria which gain entrance to water are voided from the system with the bowel discharges and conveyed by the sewage to the water.

Of the so-called water-borne diseases, malaria and amebic dysentery, which are caused by animal organisms, give very unsatisfactory evidence of water transmission, inasmuch as the organisms causing these diseases have never been isolated from water and their natural habitat is unknown. The diseases which have been most conclusively shown to be, at least sometimes, transmitted by water, belong to that class due to vegetable organisms, and are typhoid fever, cholera Asiatica, and certain diarrheal diseases.

The close connection between the character of the drinking water and the mortality from typhoid fever is clearly shown by statistics from different cities. Of our American cities, Brooklyn gave the lowest death rate from typhoid fever during the last census year. Chicago, until 1892, had the highest annual death rate from this disease of the seventeen principal cities of the United States. This city drew its drinking water from Lake

Michigan, which was polluted by sewage from the Chicago River. In 1892, two four-mile tunnels were made out into the lake, and later two more were added. The effects of pure water are shown by a comparison of the annual death rate in 1892, which was 11.5 (per 10,000 of population), with that of 1894, when it had fallen to 3.1.

The methods of water purification were discussed at some length by Thomas B. Carpenter, M. D. The filtration of water by methods which simulate closely the natural percolation of water through the superficial layers of the soil seems to be the most efficient. This is effected by the sedimentation of the water in basins to remove the grosser particles and subsequent filtration through beds of sand. A large number of such are in existence, and are confined mostly to Europe, where greatly polluted streams render it imperative that efficient methods of purification be practiced. Mechanical methods of filtration have received much attention of late because they can be operated and constructed cheaper than natural filterers. These filters are of two varieties, the "gravity," in which the sand is placed in wooden tanks into which the water is pumped for filtration, and the "pressure," which has closed steel tanks placed in the direct main service. Satisfactory comparisons of the work done by natural and mechanical methods cannot be made at present, because sufficient data regarding mechanical filtration is not obtainable; but from statistics at hand, as given by cities using mechanical filters, the typhoid death rate has not been reduced to the extent that it has in cities using natural methods.—Int. Med. Journal.

Hygiene of Athletics and Physical Education.

In a late issue of the New York Dietetic and Hygienic Gazette Dr. Jackson speaks pertinently of the inestimable value of systematic exercise; moderate indulgence in digestible, nourishing food; the free imbibition of pure water, and the interdiction of stimulants, sedatives and narcotics in effecting a cure. It is shown that the disease fastens itself most frequently upon those who are pent up in poorly ventilated offices; those who are engaged in mental efforts; those who undergo little physical, muscular effort; those who drink malt liquors before eating gorgeous meals and smoke strong cigars thereafter.

It is made clear that alcohol, nicotine and caffiene, when excessively used, hinder aeration and prevent decarbonization of the blood. All starchy foods are in the outset of treatment condemned for at least one fortnight. Peptonized milk, poached eggs, and tender boiled steaks are prescribed until the mucous glandular lining membrane of the stomach has sufficiently recovered its tonicity to put forth normal digestive juices. The blood must be aerated and the general system must be rebuilded by a process of extensive oxygenation. For this purpose it is recommended that the patient take a brisk dash of some form of exercise to last until a free perspiration come out over the whole body for one half hour every day; that he drink copiously of pure water; that he eschew, religiously, the use of wine, beer, brandy, coffee and tobacco; that he cease taking purgatives and pepsin.

The Doctor enumerates the constituents of a mild chalk water which flows from a bed rock fountain showing eighteen grains of minerals to each gallon—principally composed of the carbonates. The water is further carbonated, as it flows fresh from the well, with one and one-half cubic inches of dioxide gas per gallon. It certainly seems apparent that the dyspeptic, if other directions are followed, must derive great benefit from flushing his system plentifully with naturally carbonated chalk water. Water, next to air, is the great carrier of oxygen, and oxygen is the great purifier and rebuilder.

The Lessons Taught by the College Boat Race.

The great lessons of life are lessons of evolution, in which perfection is brought out through experience. That experience may be long and painful, every step in advance the result of experiment watched with the most careful eye and thoughtful observation. In every department in life, in every industry, and in the arts and sciences, the progress is slow, but, with the more perfect training of mind and body, ever upward until higher and more perfect results are obtained.

The contest for speed between the ocean greyhounds taxes the ingenuity of the inventor and the skill of the constructor to the utmost. Improvement is added to improvement, each improvement the result of repeated experiment and the most careful analysis of facts.

In the thousands who witnessed the recent collegiate contest on the waters of the Hudson at Poughkeepsie between Harvard, Yale and Cornell for supremacy with the oars, how many realized the fact that the race taught one of the most important lessons of the hour? As the picked men of these universities grasped their oars and bent to their work the critic could not fail but notice the stalwart form, the almost perfect proportions and the great physical strength as they grasped their oars of the crews of the two older universities in comparison with the more slender and delicate forms of the younger university. The thought which passed through the minds of the majority of the onlookers was that the crew which crowned itself with victory would be the last. And yet, as stroke after stroke was pulled, the calm self-reliance, the easy, graceful movement of Cornell showed a perfection of training, a power of endurance, a husbanding of strength, which contrasted strongly with the exhaustive efforts of the opposing crews. When the end was reached and the race fairly won the victors, as though unconscious of fatigue, shot ahead for another mile with easy, graceful stroke and unabated speed. They had not only won but brightened and strengthened their victory by their unfailing power of endurance, while the others were so exhausted at the end of the race as to—some of them—fall senseless in the boat. The lesson taught was one of the most important ones in life; the accomplishment of great results by the conservation of physical and mental power, so directed and so controlled as to extend the reserve force to the utmost possible limit. This can only be accomplished on lines which have been worked out by patient toil and careful experiment. This is specially seen in the trained nurse, who has been taught how to accomplish results in the management of the sick which would seem impossible with so little display of strength.

The question has been gravely considered by many educators if these contests of strength and skill on the water, on the ball field and in the gymnasium are not to a certain extent dangerous and liable to interfere with the classical, literary and scientific studies of the student. That there is danger in the ball game we freely admit—that it is liable to be brutal; and in the excitement of the game difficult to be kept under safe control—but in all these exercises there is not only a physical but a mental education which quickens and develops thought and increases physical and mental self-control.

The mind works with greater clearness in the classroom and more readily grasps the thoughts of the author, and the student leaves his alma mater with a stronger, clearer brain and better fitted to enter upon the active duties of any profession than the pale, careworn student whose days and nights, through the long years of his college life, have been spent in the study of books until his brain has become an encyclopedia of other men's thoughts.

The way in which the victory of Cornell was won adds to its strength as a lesson for the times, and the lines which led to it will be studied to advantage in future college races as well as utilized in the classroom.

Exercise and Anvancing Years.

To what extent and in what manner shall the man at or past middle age take exercise, is a momentous question. Forty-nine men out of fifty who have reached life's meridian, are made aware, without any inquiry, that they are not capable of the physical effort of ten or even of five years before. The hill they used to trip up so blithely now causes a puffy weariness when attempted; the ball refuses to go as far by several feet, notwithstanding the utmost straining, and even the innocent lawn mower seems much less like a plaything than formerly.

It is universally admitted that all men must have more or less exercise to keep them in a fair state of health, and the man of forty-five needs it as well as the man of twenty-five, but just to what extent the former can safely indulge in athletics is a matter seldom properly treated of in print. Writers of athletic manuals and editors of corresponding departments in the newspapers seem to assume that only the young need advice and caution in this direction and that the older ones can take care of themselves.

The middle-aged man who has all his life engaged in physical labor, especially of the outdoor variety, whose habits are good and regular, and who observes common hygienic laws,, needs little advice. His muscles have likely been kept in proper trim without conscious effort and as the years creep upon him, if he continues at manual labor, his work will naturally be adjusted to his physical condition. But the business and professional man, who is "fettered to an office stool" the greater part of the time, is in need of words of both caution and encouragement.

The prosperous American at forty-five or thereabouts is apt to be rotund and inclined toward the "aldermanic" type. If he was devoted to athletics at twenty-five, the chances are seventy-five per cent. in favor of his having abandoned them by the time he reached the meridian, so that he, together with his brother who never did take any exercise, is now very likely to be lazy and easy-going; to be given to good dinners and strong cigars; to frequent trolley rides and few good swinging walks. If he led the gymnasts at college, he is, perhaps, now entirely willing to take his share of the fun in watching, and perchance advising his younger brethren.

The smaller class who keep up their athletics into and past middle life, are apt to attempt at fifty what they could easily accomplish at thirty, without any "tapering off" to meet the changed conditions of the years. Of course this is dangerous and often the sudden snapping of life's thread, generally by breakdown of the heart, is at one and the same time the warning and the sequel.

Up to, say, thirty, a man should develop his physique, and, granted a sound constitution to begin with, may indulge in rowing, cycling, shot-putting, jumping and sprinting to his heart's content and to the extent of his heart's endurance. From thirty to forty he may continue these, but usually should during those ten years gradually reduce the violence of his exertions. After forty, (I am speaking of a man still sound in health), his whole aim should be to keep up his bodily tone and vigor by judicious exercise, foregoing the attempt to do anything requiring the least extra effort and never engaging in competition with anyone else. He must learn to forget his earlier achievements in physical effort and be moderate. He must be content to see others strive in the arena and take just enough exercise for the preservation of health—and no more.

There is peril equally in overdone and underdone physical exertion. The sedentary man who takes exercise at all is prone to take too much or the wrong kind; the majority of indoor workers are difficult to move at all in this direction. In the attainment of the happy medium in this matter each man must be a law unto himself. Moderation is the watchword. There are those who ought never to box, though many can, in moderation. Others should never row or run. Most men can cycle and be benefited —always provided that moderation be used. Nearly all can take long, open-air walks and many can climb mountains. Walking is always a safe and excellent preservative of tone and elasticity of the system. Horseback riding is a form of exercise too often neglected in these days, but decidedly beneficial and possessing, with walking, the advantage of not being liable to overdoing.

Dr. Dio Lewis said that once when walking on the street in Boston, he saw a big, stout man suddenly stop, leap into the air, give a whoop, slap his arms and walk on. Naturally astonished, the doctor pulled up alongside and ventured to inquire the reason of the outbreak.

"Oh," said the fellow, "I feel good!"

This man, so hearty and so ungrammatical in his expression, most probably could not have run many blocks without "winding;" he would have been little use and his weight a positive encumbrance in a racing boat; he might not have been able to do himself credit with the gloves; the lawn mower would probably have been his best hold—but he felt "good." By "good" he meant well, and to feel that way is all that need concern a man over forty-five, so far as his physical condition goes. To feel well, a man at this age must take the requisite quantity of the right kind of exercise. This may be readily accomplished. It only takes a little thought, self-control, system and the rooted conviction that time spared from business and devoted to some form of simple, beneficial, physical exertion is time spent in the very best possible manner.

ERNEST SHRIVER.

Infantile Athletics.

Dr. Henry Ling Taylor, in a paper with this title, called attention to the proportionately greater effect of exercise in children than in adolescents or adults, and pointed out their value. But during the second year, he said, the child should be guarded against too much exercise, and should be made to take a nap every day. Dr. Gailbraith had already referred to the strain to which the infant was subjected in learning to walk, and had pointed out the significant fact that it was just at this time that anterior poliomyelitis was most apt to appear. Dr. Taylor advised that infants should go barefoot until the time for walking arrived, as in this way the circulation was better maintained, and the development of the foot unimpeded. Neither man nor child could attain the best development in a sultry atmosphere, and hence the child should be allowed to tumble around while freely exposed to the air. This "air bath" should be taken twice a day. While free exercise was desirable, evil frequently resulted from forcing children to sit up at too early an age, or coaxing them to walk too soon.

NOTES AND COMMENTS.

On the Practical Bearing of Washing Out the Stomachs in Infants.

Leo (Der Kinderarzt, 1896, viii, 9; Pediatrics, Jan. 15, 1897) claims that washing out the stomach in infants is a perfectly rational method of treatment and deserves to be more frequently employed. It is exceedingly simple and is performed exactly as in the adult. A common soft stomach tube of five millimeters' diameter inside is used, to the upper end of which is attached a rubber tube about one meter long with a funnel. The tube is to be passed while the child sits in its mother's lap, and the washing is at once proceeded with, and continued until the water returns clear. Simple warm water may be used for this purpose. If intestinal symptoms predominate we may add a few cubic centimeters of an alcoholic solution of thymol, and where atony of the stomach is marked the addition of table salt is to be recommended.

The indications for stomach washing are: the acute dyspeptic conditions, under which is grouped simple acute dyspepsia, acute gastritis, and gastro-enteritis. Not infrequently a single washing accomplishes the cessation of vomiting and diarrhea, even where they have existed for several days. If one washing has not the desired effect it is to be repeated once or twice on the following day. The vomiting is most markedly influenced by the operation; besides this, the appetite and general condition improves promptly. Should the diarrhea still continue it is to be treated by diet and internal medication. In typical cholera infantum favorable results from the washings were in most cases not obtained, though in some subacute and even chronic conditions very good results were noted.

Cases of temporary dilatation and great accumulations of gas are usually accompanied by disturbance of the appetite, frequently by vomiting, poor nutrition, and anomalies of defecation. The cause of this condition is generally an atony of the walls of the stomach, frequently accompanied by anomalies of its contents. In such cases a repetition of the washings may be necessary; at the same time dietetic, roborant, and other judicious treatment must be combined with it.

It is a Mistake.

To work when you are not in a fit condition to do so. To take off heavy underclothing out of season, simply because you have become overheated. To think that the more a person eats the healthier and stronger he will become. To believe that children can do as much work as grown people, and that the more they study the more they learn. To go to bed late at night and rise at daybreak and imagine that every hour taken from sleep is an hour gained. To imagine that if a little work or exercise is good, violent or prolonged exercise is better. To conclude that the smallest room in the house is large enough to sleep in. To sleep exposed to a direct draught at any season. To think any nostrum or patent medicine is a specific for all the diseases that flesh is heir to. To imagine that whatever remedy causes one to feel immediately better—as alcoholic stimulants—is good for the system, without regard to the after effects. To eat as if you had only a minute in which to finish the meal, or to eat without an appetite, or to continue after it has been satisfied merely to gratify the taste. To give unnecessary time to a certain established routine of housekeeping when it could be much more profitably spent in rest or recreation. To expect a girl or woman to be handsome when the action of her lungs is dependent on the expansive nature of a cent's worth of tape.—Philadelphia Record.

Effect of Age Upon the Eyes.

The cornea takes the form of a border ring of whitish tissue, the cause being the fatty degeneration of the surrounding parts of the cornea. The strength of sight decreases with age, until it becomes difficult to distinguish small objects placed close to the eyes. This, however, may be in a great measure remedied by the use of suitable spectacles. Cataract, although frequently accompanying old age, is by no means a necessary consequence of it. In youth the lens is perfectly transparent and colorless. After the thirtieth year it begins to acquire a pale yellow tint, and as age advances this becomes more pronounced, until it is finally trasformed into a deep amber. These changes in the normal transparency coincide with a failing in nutrition, but their progress is not accompanied by loss of sight. When a total loss of nutrition ensues, however, the lens becomes quite opaque, and the operation for removal, which has been brought to such perfection in late years, becomes necessary.—The Optical Journal.

Operation for Idiopathic Insanity.

Mr. Street and Mr. Damar Harrisson (The Lancet, March 6, 1897) related a case of successful brain localization and operation for idiopathic insanity. The patient was a man who for two years had hallucinations of hearing, without any previous head injury. He became depressed, was unable to sleep, and took to drink. The voices were those of friends far away, and they goaded him to destroy himself in order to avoid disgrace. He had constant headache on the left side. He took six grains of opium daily without procuring sleep. He had attempted to cut his throat. Mr. Damer Harrisson trephined, making a large opening over the centre for hearing, and opened a serous cyst. The result was entire recovery, and the man is now at work.

How Sanitary Matters are Managed in England

London, June 26.—An economic and scientific experiment will be inaugurated on Monday, when Lord Kelvin opens at Shoreditch the combined electricity and dust destruction works erected at a cost of about $750,000. The destructor cells are capable of burning 20,000 tons of ashbin refuse yearly, and the heat given out is sufficient for the electric light and the power of the whole of Shoreditch, with a population of 124,000, besides supplying heat to the adjoining baths and wash houses. SOLIPED.

Food and Feeding.

Persons of sedentary habits and brain-workers need less meat than those who are active physically all day. Beyond this well-known and accepted truth the opinions of dietists, except the radical vegetarians, seem to agree that a veried diet is the most beneficial. The suggestion of a writer on food topics that children from twelve to fourteen years of age need more nutrition than before or after will be a new one to many mothers. It has been more commonly supposed that the early growing years, from five to nine, were those which demanded the abundant food sustenance.

The Number of Suicides.

The number of suicides in 1890 was 2,404; in 1891, 3,531; in 1892, 3,860; in 1893, 4,436; in 1894, 4,912; in 1895, 5,759, and in 1896, 6,420, and these all occurred in the United States. What relation has this to the general business depression, and the consequent inability to provide for the family, if any, and is the same increase shown during other times of financial depression?

Listerine THE STANDARD ANTISEPTIC

LISTERINE is to make and maintain surgical cleanliness in the antiseptic and prophylactic treatment and care of all parts of the human body.

LISTERINE is of accurately determined and uniform antiseptic powder, and of positive originality.

LISTERINE is kept in stock by all worthy pharmacists everywhere.

LISTERINE is taken as the standard of antiseptic preparations: The imitators all say "It is something like LISTERINE."

AMBERT'S LITHIATED HYDRANGEA. *A valuable Renal Alterative and Antilithic agent of marked service in the treatment of Cystisis, Gout, Rheumatism, and diseases of the Uric Diathesis generally. . . .*

DESCRIPTIVE LITERATURE UPON APPLICATION.

AMBERT PHARMACAL COMPANY ST. LOUIS

Rest for the Heart.

The object is simply this: Nature takes the time when one is lying down to give the heart rest, and that organ consequently makes ten strokes less a minute than when one is an upright posture. Multiply that by sixty minutes and it is six hundred strokes. Therefore in eight hours spent in lying down the heart is saved nearly five thousand strokes, and as the heart pumps six ounces of blood with each stroke, it lifts thirty thousand ounces less of blood in a night of eight hours spent in bed than when one is in an upright position. As the blood flows so much more slowly through the veins when one is lying down, one must supply then with extra coverings the warmth usually furnished by circulation.—Every Where.

Antifat Patient.

Generally speaking, persons who seek treatment for being too fat, have good appetites, are healthy and strong. Their greatest need is exercise, but this they find harder to take than anything else. In illustration of their docile submission to treatment—not involving restraint—Dr. I. Zangwell, at a recent dinner of the Maccabees, told the following story: "The fat girl of C., gentlemen, is not a myth, nor a show person, but a solid private reality that I have seen. Her fatness weighed upon her, so she went to a physician to be rid of some of it. He drew up a careful dietary; she was to eat dry toast, plain boiled beef, etc., and to return in a month to report reduction. At the end of the month she could hardly get through the doctor's doorway. He was aghast. 'Did you eat what I told you?' he asked. 'Religiously.' His brow wrinkled itself. Suddenly he had a flash of inspiration. 'Anything else?' he asked. 'My ordinary meals.' "

It is reported from Chicago that a well-known lawyer, of prominent social and political position, has been arrested for expectorating in a street car. He threatens to sue the company for $50,000 damages.

THE
ANNALS OF HYGIENE
PHILADELPHIA VOL. XII NO. 9

COMMUNICATIONS.

PERSONAL PURITY.*

Addresses to Men in St. Peter's Church, Baltimore.

BY HOWARD A. KELLY, M.D.,
Johns Hopkins Hospital.

MRS. KATE BARRETT,
New York.

MRS. BARRETT'S first talk in Baltimore was before an audience of some 1400 young men at a Sunday afternoon meeting in the Y.M.C.A Building. Being a woman of unusual culture and marked refinement, the wife of an Episcopal clergyman, and the mother of three sons and three daughters, her labor of love in behalf of the Florence Crittenton Missions commands the respect and rapt attention of the most thoughtless in her audience.

Though speaking on a theme sadly misjudged to be too delicate or sacred for even a parent's counsel to an enquiring child, questions of sex or propriety seem never to intrude on such an occasion, the thought being entirely held by the eloquence and pathos of the situation—a woman deeply conscious of the degredation of these sisters, spending her life in their behalf, appealing to the conscience and manly instincts of those who so lightly seduce and betray their trusting victims, or who assume an attitude of unrighteous indifference to what they term a necessary evil.

---

* From The Health Magazine.

So honeycombed is society by this vice that simply as a mother she feels a responsibility for the protection of her own children from its influence, direct or transmitted.

MRS. BARRETT'S ADDRESS.

Mrs. Barrett spoke from the chancel, using no manuscript, and her remarks followed those of Dr. Kelly's. She said she had been praying for such a man for twenty-five years, and paid him a high compliment for lending his name and influence to this work. Every year she meets, all over the country, some 3000 girls who have just been seduced and abandoned to their fate. Man is the only animal which accomplishes crime by first winning the affections. She believed this crime was due rather to thoughtlessness and stress of temptation than to deliberate intent.

Let us hear less of fallen women and more about fallen men, without whom the first would be impossible. The fatal step once taken, the man continues in society, shaking himself free of his victim, and arguing away the consequences of his act by the plea that after all he does not know that he was the first thief to rob the bank. Mrs. Barrett narrated incidents of many conversations held with such girls, mostly under seventeen years of age, at the time—farmers' daughters and others, who had come to cities to be house servants; even daughters of clergymen, etc. Their betrayers, of course, could not marry any but pure girls, who have never gone astray!

The fact that these girls never have any evidence to show against the man (and would not use it if they had), only tends to confirm the opinion that they are telling the truth.

The American Indian had no word in his language for prostitution; and it is also unfair to speak of promiscuous intercourse as beastly; for wild animals are faithful to their mates, however civilization may alter this trait.

The causes of this evil are, with women, low wages, defective education or home training, evil environment, etc. Without liquor the business would be deprived of its mainstay. The average life of these unfortunates is six years. Once in its toils, they are practically at the mercy of their employers, who manage to keep them ever indebted to the house (food, clothing, wines, etc.). The cowardly double standard of morals was held up to scorn; and speaking of the flippant counsel to young men "to sow their wild oats,'' she scored the professors of colleges and unworthy physicians who are guilty of such obliquity. Her own sons had come to her from college life, having encountered such advice. The laws attempting to regulate this evil have the unmistakable stamp of a masculine hand.

DR. HOWARD A. KELLY'S ADDRESS.

It is now about a year since I had the pleasure of speaking to a large audience of men in this church on the subject of personal purity, a subject which touches our common manhood more deeply, perhaps, than any other in the world. I spoke to you then somewhat diffidently, urging upon you the broad principles of morals as laid down in the Bible. But with added experience, and the revelations naturally brought to me by my daily occupation, I have accumulated a fund of information which places me from now on in a position of unremitting and active aggression against impurity in all its forms.

I grew as a young man under the impression that all kinds of sexual vices were so infrequent that it was best not to mention them for fear of spreading the evil. I now know that the whole length and breadth of our land is interpenetrated with the rootlets of this gigantic evil, that vice is rampant in our cities, and that no subject is more commonly talked about. It is the devil who says: '' Don't talk about prostitution, it is an improper subject.'' The righteous man will say instead : '' I will never cease to talk about it and to fight it, until it has been destroyed root and branch.'' I am glad then to be able to talk to you on the advantages of chastity and the evils and miseries of unchastity, because I want every man of you to go away from this church not only determined to keep his own body in subjection, but also resolved to do missionary work in this great cause. What I have to say to you naturally divides itself in my mind into three parts :

1. Personal impurity as it affects men.
2. The relations of women to prostitution.
3. Practical ways to meet the social evil.

There is a text in the Epistle of St. Paul to the Corinthians, which says, '' If any man defile the temple of God, him shall God destroy ; for the temple of God is holy, which temple ye are.'' Now, some of you may not believe the Bible as I do, but if any man here has been tempted into impurity, he knows that the text is true. "The wages of sin is death" is just as much a scientific truth as a moral one. If you want convincing proof of that you have only to glance over the columns of some of our daily papers, which fairly reek with the crimes of immorality, betrayal, divorce, abortion, suicide and murder.

Consider this matter for a moment in some of the ways it affects men. Take the case of the young man who is addicted to self-abuse. I know of a college professor who, in an apparent hugging to himself of virtue, said that he had never visited a house of ill-fame, while confessing that he had abused himself for years. What is the harm? Why, all the harm in the world. The man who stoops to so contemptible a vise loses a moral force that is simply incalculable. He becomes a weakling, and when great moral questions arise which require a clear judgment and energetic action, he is found wanting. Not a few victims of self-abuse end in the insane asylum, or, if they do not get so far as that, they become miserable and morbid, utterly unfit for the duties of life.

Another aspect of the question is the case of the man who betrays a confiding, innocent girl, either in a moment of passion, or simply as a kind of sport. The euphemism for this kind of sexual vice is "getting a girl into trouble," and the way her seducer goes about to get her out of trouble is either to take her to an ignorant abortionist where she is very likely done to death, or to let her bear alone the burdens and the disgrace of unwedded motherhood. Can a man be guilty of a greater villainy than this?

I want to read to you something from Mr. Lecky, the historian of European morals, on this point:

"When we reflect that the object of such a man is by the coldest and most deliberate treachery to blast the life of an innocent woman; when we compare the levity of his motive with the irreparable injury he inflicts, and when we remember that he can only deceive his victim by persuading her to love him, and can only ruin her by persuading her to trust him, it must be owned that it would be difficult to conceive a cruelty more wanton and more heartless, or a character combining more numerous elements of infamy and dishonor."

"Not until our civilization shall have wrought out in life what Hawthorne wrought out in 'The Scarlet Letter,' and the man takes his stand in the pillory by the woman, and the scarlet letter is on the breast of the one as on the breast of the other, and both alike bear the ineffable shame, and each help the other back to the ineffable glory, shall we find Christ's remedy." (Lyman Abbott, Sermon on the Social Evil, January 19, 1896, in Plymouth Church.)

But the commonest form of sexual vice among men is prostitution, and here occurs one of the most curious phenomena. Every man holds to strict account another man who enters his home and seduces his wife or daughter. We continually read of seducers who are shot down by an outraged husband or brother, and it is almost impossible to convict a man for such a murder. There seems to be a sort of unwritten law that this form of homicide is justifiable. But when the woman has once been led astray and gets, very likely, into a house of ill-fame, this fine sense of honor (is it honor ?) is all spun out into thin air. The male prostitute does not reflect that his partner in sin has been some man's daughter, or wife, or sister. No, she is to him simply the means by which he gratifies a vile passion. "I did not lead her into it," a man will say. But you can lead her out of it, you can yourself abstain from going there ; you can help women prostitutes into a reputable life ; you can influence other men to live pure lives.

It is not a venial sin for men to consort with prostitutes. It blunts a man's finer sensibilities, it lowers his respect for women, it leaves its indelible marks in disease, for sooner or later every man who indulges his passions unlawfully contracts disease. It is not possible for either men or women who prostitute themselves freely, to escape it. And these diseases are not only the most loathsome and the most disgusting in their early manifestations, but they have the horrible characteristic of becoming latent. A man who contracts disease of this sort can never be sure that he is cured, for venereal disease is not a merciful disease, like cancer, killing its victim within a certain definite time. Rather, it is a death in life ; such local lesion may occur as to destroy forever the sexual function; and the unchaste man finds that he is incapable of realizing one of the chief blessings of life, surrounding himself with a family of children, who will be to him in the struggle of life a daily incentive and comfort, in whom in old age he may live again.

Or, if not made sterile himself, he may make his wife sterile, and this is one of the most pitiable and most unjust results of the immorality of men. No man, no matter how much he may prostitute himself, ever marries a prostitute. No, his wife must be a pure woman, and perhaps he may infect her at once. Fancy the shame and pain of that to a sensitive, pure-minded woman! How can a woman retain her love for a man who has dragged her into such filth! Many an unhappy wife dates the beginning of her marital troubles to loss of respect for her husband in the fearful knowledge thrust upon her that she has married a prostitute. Very likely, too, she dates a life of pain, suffering and invalidism from her very wedding day. For these diseases are even more disastrous to women than to men. Infection sets up a series of abnormal processes, which either make it impossible for the wife to bear children, or cause such grave symptoms that the poor woman has often to decide between death or a dangerous mutilating operation, an operation which men resist to the last extremity.

Professor A. R. Simpson, of Edinburgh, in his inaugural address as President of the British Gynæcological Society, in 1892, says on this subject:

"When the day comes for the righting of the wrongs of women the law will do something to protect her from this injury, or compensate her where it has been inflicted on her innocence. Assuredly if it had been the rule that this disastrous element was introduced into the marriage contract by the wife, instead of being, as is the case, the rare exception, we men would long ago have found legal means of freeing ourselves from partners whose condition was a danger to us and our offspring."

The whole question of the relations of sex, in both law and custom, is full of injustice to women. Think how utterly unjust it is for men to claim for themselves a license that they would never dream of permitting to their mothers, sisters, wives and daughters. There is a false notion among men that unchastity is necessary to health. If unchastity is necessary for men, I assure you it is equally necessary for women. And what would become of the social order in an orgy like that? I do not know of any respectable physician or any physiologist who holds that incontinence is necessary or even desirable for healthy men and women. (See *British Medical Journal*, March 14, 1896.)

On the contrary, there is plenty of medical testimony in favor of chastity, both in the single life and in marriage. Dr. Kellogg, in a paper before the National Purity Congress, held in this city last autumn, says:

"In the course of my own professional experience, I can truthfully say that I have never met with a single instance in which disease of any kind was present as the result of a pure or continent life. On the other hand, I have seen the most horrible results from the unlawful and unprofessional advice sometimes given by physicians to young men, suggesting unchastity as being essential for the relief of some physical weakness, though I have never met with a single case in which the slightest benefit had been derived from following such advice. My observations, with reference to the character of those who give professional advice of this sort, have long ago led me to the belief that, as a rule, only those who have themselves been impure to such an extent that they were bereft of their ability to judge properly of the influence of a pure and continent life, are capable of giving such unwise and immoral advice."

Finally, I think every right-minded man will realize his personal responsibility in this matter, when I remind you that every community is just as pure or as impure as the men make it. For it is men who sustain prostitution; if its maintenance were left to the active efforts of women, it would sink into insignificance.

The difference between man's treatment of the woman who sins with him and that of Christ is strikingly brought out in the well-known story of the woman taken in adultery (St. John viii, 10, 11). You remember that when Jesus said: "Let him that is without sin among you cast the first stone," all her accusers fled, and the prostitute was left alone with Him.

"And Jesus said unto her, Woman, where are those thine accusers? Hath no man condemned thee? She said, No man, Lord. And Jesus said unto her, Neither do I condemn thee; go, and sin no more."

Let us try to apply Christ's method, in considering how prostitution affects women. What does a life of unchastity mean for a woman? It means loss of respect, loss of home, loss of natural affections, loss of means of livelihood, loss of health, loss of life itself after a few years. I ask you to think seriously of the awful misery that is expressed in this one sentence; remember also that the instincts of women are for purity and the natural outlet of the affections in the family life, and that men have to pervert this before they can induce them to become prostitutes.

The difference between men and women as to the sexual instinct, when the hope of children does not enter into it, is strikingly shown by the fact that women prostitutes are almost entirely from the lowest classes; they are often ignorant girls who have first been betrayed. Men prostitutes, on the other hand, come from every class. This gives us the double standard of morality, with all its social and legal injustice to women. Consider in this light laws regulating vice, which some ill-informed persons think ought to be enacted in this country. Such a bill is now before the New York Legislature, advocated by a society of obscure citizens which bears the specious name of "The Law and Order Society of New York City." It proposes that the respectable taxpayers of New York (which, including women, must be the majority) shall spend annually $37,000 for the maintenance of houses of ill-fame to be known euphoniously as "District Inns." *The Outlook* says the bill should be entitled "An Act to create offices and give salaries for the promotion of immorality and disease in the city of New York." Politically, Contagious Diseases Acts are a foreign oppression of women, and have no place in a government which boasts of being set up to secure "life, liberty and the pursuit of happiness" to all its citizens. Morally, regulation of vice is a compromise with the Devil, and in every such makeshift the Devil is bound to get the best of it. What are the facts in Paris and Berlin, where this system has been carried out to all the perfection it is capable of?

In Paris, under inspection, the number of diseased women doubled in five years; and the official report is that "prostitution augments and becomes more dangerous to the public health." In Berlin, Professor Virchow's Commission reported that prostitution and venereal diseases were rapidly increasing. Why it increases is plain. The total number of women examined in 1891 was 4364, while it was estimated that one man in every nine or ten in Berlin was infected with syphilis.

No system of inspection can ever be effective so long as it applies to but one party in the act, and that party, collectively, in the minority. Regulation of vice is not only unjust to women, it is not only immoral and cowardly, but it is utterly unscientific. You might as well try to prevent the spread of small-pox or cholera by quarantining one sex only. The most conspicuous attempt in the United States to make vice safe was the St. Louis experiment, 1870–74, and after four years' trial the results showed such an increase of prostitution that the law permitting license was repealed by a vote of three to one in the Senate and ninety to one in the House. Contagious Diseases Acts were in force in England for some years, but have now all been repealed in the United Kingdom, India and the Crown Colonies. As to the English experience, I quote from the "Memorandum by the Army Sanitary Commission on the Statistics of Venereal Disease among British and Native Troops in India for the year 1892":

"Statistical returns from the Army Medical Department, showing the amount of venereal disease in the army at home during the period when the Contagious Diseases Acts were in force, as compared with the period since their abolition, do not show any more favorable results obtained during the time the Acts were in operation," and that, "as a matter of fact, the ratio of admissions per 1000 has decreased since the Acts have been abolished."

I will not claim that men of the Anglo-Saxon race are morally purer than those of other nationalities, but there is no doubt whatever but that the condition of women among them is better, and one evidence of this is the fact that no woman in England or America, however degraded, can be compelled by law to submit to revolting physical examinations by police surgeons.

I would suggest, in conclusion, a few practical ways of dealing with the social evil:

1. Every man personally to resolve to be as pure as the women who belong to him.

2. Every man to demand, and to insist upon, a single standard of morality.

3. By joining or supporting societies that are working for personal purity, such as the White Cross Society, for men, the Woman's Christian Temperance Union, the Purity League, for men and women.

4. By helping women prostitutes into reputable employment. An English barrister, working among the poor of East London,

estimated last winter that 20,000 prostitutes in London would gladly give up the calling if they could find respectable employment. The Florence Crittenton Missions of this country are working for this end, and they need all the support they can get.

5. All laws and customs regulating vice should be resisted.

a. Because they condone vice.

b. Because applying only to one sex, and to the minority, they are unscientific.

c. Because they have been proved over and over again only to aggravate the evil.

d. Because they encourage vicious habits among that class of men who would be restrained by a wholesome fear of contagion.

e. Because they are oppressive and unjust to women.

f. Because they are an infringement of the rights of the individual, no right being so intrinsic as that to one's own person.

g. Because it is indefensible for the State to tax respectable men and women for the support of a vice that is responsible for the worst crimes against the social order.

6. Girls should be protected by raising the age of consent in all the States to at least eighteen years.

7. Wives should have legal redress for marital infection. So late as 1889, an English court held that an innocent woman, by her marriage vows, consented to become infected, if her husband chose to inflict his loathsome diseases upon her! The poor wife, failing to find justice in law, and abhorring the man to whom she was hopelessly bound, simply disappeared, abandoning home, friends, everything, to live a cleanly life. What a travesty on civilization!

8. Lastly, in the growing recognition of women, we see one of the most powerful means of combatting the social evil. Wallace has pointed out this fact as a significant factor in the process of natural selection. The moral force of women has long been recognized, its utility is only just beginning to be put in practice. And it is within the power of every man to help in this great social and economic revolution, the advancement of women. Open up the avenues of employment to women. Assist them in every possible way to become self-supporting, make the economic conditions of life easier for them. You may think individually that the home is woman's province, but the

hard facts of our modern life are that many women, some highly educated and most estimable women, have no homes, and no hope of ever earning them, as men do, even by the most strenuous effort and by the most rigid economy. And for the homeless woman who has only unskilled labor to offer, the conditions of existence are dangerously near ruin. Many a poor girl, especially if she has once erred through trusting a man too far, is compelled to live in shame to live at all.

With these awful facts staring us all in the face, the duty of every pure, right-minded man is as clear as the daylight.

VENEREAL DISEASES IN BRITISH TROOPS IN INDIA.

The repeal of the Contagious Diseases Acts in 1888, brought about by the sentimentality of a philistinish public in England, has been followed by such an alarming increase of venereal infection as to have given rise to a serious discussion of the problems involved. A committee appointed by the Royal College of Physicians has recently reported as follows:

"That as the civil, military, and medical officers in India are best acquainted with the local conditions now existing, and affecting this prevalence of venereal disease, so they are the best judges of the most efficient means of dealing with it. Your committee, therefore, suggests that power be given to the Government of India to take such steps for the mitigation of this evil as these officers may advise.

"That for the protection of the healthy population venereal diseases in both sexes—in the soldiers as well as the women—be subjected to the same restrictions as are other contagious diseases; such restrictions having for their object the detection and prevention of such diseases.

"With regard to the unfortunate women, such measures necessarily include examination as well as treatment; and it may be desirable in India that the examination should be performed by persons of their own sex, who have been sufficiently trained and educated for the efficient discharge of this duty."

In no other country, with the possible exception of America, could such obvious practical deductions be controverted.

VENEREAL DISEASES IN THE BRITISH ARMY.

The condition of the British troops in Hindoostan was made the subject of a report by the Secretary of State for India, and an appalling document it truly is. From 1890 to 1892 a cantonment act was in force, which was abolished in 1893. During the earlier years there was a steady and even rapid decline of admissions to hospital; after 1893 there was an equally steady and rapid increase. The highest recorded figure of incapacitated men was reached in 1895, when 522.3 men per 1000 strength, or 536.8 per 1000 of troops in cantonments were in hospital. Among 5882 men detailed for field service with the Chitral Relief Force, 462, or nearly 8 per cent., had to be rejected owing to disease; 279 more, or an additional 4½ per cent., had to be transferred from the field-hospitals to the base. According to this ratio, 8880 men out of a total force of 71,031 British soldiers in India would have to be put down as useless.

How many of these men when they return from India communicate infection to the civil population at home it is impossible to estimate. Perhaps some inkling of the truth in an inverse fashion may be gathered from the fact that in 1894 it was discovered that only 37 per cent. had never suffered at all either in or out of India.

It is known that among the majority of European armies special regulations are enforced in combating disease. The British army in India is an exception. The ratio per 1000 strength of men incapacitated in the German army is 27.3; in the Russian, 43; in the French 43.8. In the British army it is 203.7 at home and 438.1 in India! Comment is superfluous.

This deplorable state of things does not appear to be attributable to general causes, but to venereal disease alone. Drunkenness and crime have greatly diminished. More care than ever is taken of soldiers in the way of recreation, cleanliness, and the encouragement of athletic and manly sports. The fact remains that among a body of men, mostly very young, and nearly all obliged by the condition of the service to remain unmarried, only few can resist such temptations as are offered to them.

It appears that numbers equal to a brigade of infantry are constantly non-effective through venereal disease in the force of 70,000 men in India. That is the direct effect; but the indirect

—that is, the abrogation of sanitary regulations—is much worse, nay, even incalculable, for many ailments causing invaliding, and even death, although not classified under venereal diseases, nevertheless spring from them. The shocking constitutional deterioration and breakdown under venereal taint which medical officers in India witness fill them with mingled pity and disgust that such things should be permitted by really humane men.

To sum up losses and gains under this so-called moral, but really cruel, crusade: 1. Prostitution greater than ever. 2. Virulence of disease much increased. 3. Direct inefficiency alarming; indirect, incalculable. 4. Taint spread at home by returned time-expired men. 5. Soldiers' morals not elevated by fear of venereal diseases. 6. Moral gain absolutely nil. 7. Physical suffering wantonly aggravated.—*Medical Herald.*

THE IMPORTANCE AND GOOD RESULTS OF CIRCUMCISION.

BY MARK O'DONNELL, M.D.,
Late Assistant Physician Georgia Insane Asylum ; Vice-President Georgia Medical Association ; Member Macon Medical Society.

The operation is simple, as well as harmless, if cautiously and asceptically performed ; although I have noticed some unpleasant results, and even death, from it.

On this account some, I presume, fail to perform it ; also upon the ground that it deprives the glans of that highly sensitive condition which they think should be preserved for nature's cause and reason.

Granting truth in these arguments, they are but frail and weak reasons in so important an operation as circumcision, which should be done in the majority of all subjects.

For the sake of cleanliness and hygiene alone, I regard it as justifiable. In the warm season the person with a long, tight prepuce undergoes no little amount of annoyance and trouble from the irritation of the glans penis, by the retention of foul secretions necessarily held underneath and behind the coronas.

The Jews, who are perhaps the healthiest of all classes in this particular line, remove the foreskin always on the ninth day of the Jewish baby's life. And show me a class of people who suffer less from venereal diseases, of all kinds, than the Jews. Were the Gentile race to adopt such a religious rite, there would be far less suffering in their race from the cradle to the grave, and the per capita of the insane asylum lessened, and there would be fewer so-called epileptics and masturbators throughout the country.

I have noticed in small babes and children distressing troubles from long prepuces—irritating eruptions, acnes, etc., which could not and which would not succumb to any medication save the operation, being purely reflex neuroses, and which quickly recover so soon as the simple surgery is done.

The susceptibility to chancroid and gonorrhœa is beyond question greater where men have these redundant pouches, that serve as garbage boxes for all that is unclean, contagious and infectious in the venereal category. We often have to do circumcision to treat these diseases, running the risk of infecting the fresh surfaces, whereas the simple use of a pair of Jewish scissors, and a bit of styptic cotton on the ninth day would have avoided all.—*The Alkaloidal Clinic.*

VENEREAL INFECTION.

A. Palmer Dudley, M.D., of New York, in *The American Gynæcological and Obstetrical Journal*, writes: "Of all the forms of disease to which the pelvic organs of women are subject, that which she least suspects becomes the most dangerous, and, ere she realizes it, has wrought irreparable damage to her. Originating in sexual intercourse, if communicated by the husband, he seldom if ever acknowledges its character to her, and if contracted out of wedlock, its recognition is usually concealed until its germ has passed beyond control by methods other than surgical."

The Doctor gives the following case, and we think remarks are unnecessary. The necessity of personal purity is fully shown:

"A gentleman consulted me four days ago respecting the condition of his wife. She was treated by his family physician, who had called in consultation a second man, the latter recommending immediate operation. I was asked to see her as a third party and give an independent opinion. The woman was prepared for examination, and I at once recognized what I considered to be positive signs of gonorrhœal infection of the external parts. A simple digital examination showed the left appendage to be four times its normal size. I took the husband one side and in a positive manner asked him when he had suffered from gonorrhœa. This he absolutely denied at first, but later acknowledged that he had had it twice. The history of the wife's illness, extending over a period of years, tallied well with the repeated attacks or exacerbations of a gonorrhœal infection. The woman was in such a wretched condition that radical operation for the removal of the appendages would certainly have meant death. I at once advised aspiration of the appendages through the vagina, which was consented to, and ten drachms of pus were removed. This I sent to a microscopist without any history of the case, simply asking him for his knowledge of the contents of the pus. The following letter received the same day corroborates the diagnosis:

'My Dear Doctor: The specimen of pus left on this date shows under the microscope numerous gonococci in the pus-cells and free. There are also a few streptococci and two or three varieties of bacilli present, showing a mixed infection. The original infection was unquestionably gonorrhœa.

'Yours very truly,
(Signed) 'F. A. Lyons, M.D.'

"Here was a case in which, from the husband's own confession, infection had taken place five years previously and had been kept alive by frequent exacerbations of the primary infection."

ANTI-VIVISECTIONISTS AND THE DEGENERATE.

A degenerate sexual pervert recently executed for lust murder, at Paxton, Ill., has had his mental soundness doubted because of his sentimental kindness toward animals. Sentimentality of this type is exceedingly common among criminals and other degenerates about whose legal responsibility no true alienist could entertain a doubt. They have both a knowledge of right and wrong with a power of self-control, which alone would be sufficient evidence of responsibility under the true legal test which depends on whether freedom of the will be impaired. Despite the assertions of the anti-vivisectionists, misanthropy is often associated with great love for the lower animals, and the races characterized by their great tenderness toward animals are the most cruel toward men. This was singularly well illustrated in the Sepoy rebellion, where fanatics, indignant at the killing of cows, butchered men, women and children with horrible atrocity. The same thing is illustrated in the suspicional world-betterers who so marred the French Revolution. Couthen, one of the most merciless of "the Committee of Public Safety," was very much devoted to spaniels. Chaumet exceeded female sentimentality in his tenderness to his birds. The murderous Fournier carried on his shoulders a pretty little squirrel attached by a silver chain. Panis was intensely devoted to his pheasants. Marat reared doves. Sergent, another agent of the Reign of Terror, was also devoted to spaniels. A lady came to implore his protection for a relative confined under sentence of death. He scarcely deigned to speak to her. As she retired in despair she trod by accident on the paw of his favorite spaniel. Sergent, enraged and furious, exclaimed, "Madam, have you no humanity?" It may seem, as Havelock Ellis remarks ("The Criminal"), a curious contradiction of what has been set down concerning the criminal's moral insensibility, his cruelty and his incapacity to experience remorse when it is added that he is frequently open to sentiment. It is however true. Whatever refinement or tenderness of feeling criminals attain, reveals itself at what we should call sentiment or sentimentality.—*The Journal.*

Some Personal Observations upon the Effects of Changes of Climate upon Men and Animals.*

BY RICHARD COLE NEWTON, M. D,

Montclair, N. J.; late Assistant Surgeon U. S. Army; Visiting Surgeon to Mountain Side Hospital; Surgeon to the Greenwood Lake Division of the Erie Railroad, Etc.

(Continued from page 442)

DURING my eight years' service in New Mexico, Texas, and the Indian Territory I saw almost no nephritis and very little rheumatism; and, as regards the welfare of sufferers from the latter complaint, I am disposed to disagree with Dr. Solly (Hare's System of Therapeutics, Vol. I, article on Climatology), who esteems altitude inimical to them. I did see some severe attacks of acute articular rheumatism, which originated in the places mentioned, but they were not frequent. They seemed often to be, at least in part, due to the excessive use of alcohol, and were quite amenable to treatment if abstinence from liquor could be enforced. It was a common saying out there that cases of rheumatism contracted in that climate would get well if sent East, and that cases contracted in the East would get well in their climate. The first proposition seems to be borne out in a few cases which came to my knowledge. I do not remember to have met with any instances bearing upon the second.

It was also a common saying among the army officers that children brought from the East to the Rocky Mountains would do well, but that those taken from the mountains to the seaboard would do badly. Both of these statements I think are true. I do not believe in extreme changes of climate for infants and young children, but I feel satisfied that a change from a higher altitude to a lower is far more dangerous for these little people than the opposite change. Leaving out some cases of malarial fever, I can scarcely recall a death of an infant in my practice during my Western service, whereas I can recollect a number of small children of army officers who died after having been brought East. One of these was my own child, aged four years at the time of his death. His brother, aged six months, was apparently well when the elder boy died, but soon began to develop symptoms of disturbed nutrition. He was in a precarious condition for months. He had rickets and did not walk until nearly three years old. He is now nervous, has flat feet, and is less robust than his younger brother, born in New Jersey. But I am glad to say that the fine climate of his present home agrees with him, and, as he gradually improves, we hope that he will grow up a stalwart man. It is only fair to state that both of these children had been exposed to malaria. Malaria is the stealthy enemy of the weak and unacclimated, and seems to attack with special violence any one who has recently undergone the shock to the nervous system which change of climate undoubtedly produces.

---

*Read before the American Climatological Association, at the Fourth Triennial Session of the Congress of American Physicians and Surgeons, at Washington, D. C., May, 1897.

At Fort Stanton I saw a few cases of aneurism, more than I have seen in the fifteen years since I left there. A few of them died from rupture of the sac.

At this same post I saw a few cases of so-called mountain fever. They all had petechiae. One of them died of intestinal perforation, and an autopsy showed that the condition was typhoid. These cases were all, I believe, contracted in Fort Cummings, N. M., where the typhoid infection was in the drinking water. The only remarkable thing about them was their excessively short duration and mild and uneventful course. The fatal case had not been confined to his bed, temperature had not, so far as known, exceeded 100 degrees F., his diet had not been restricted, and he had been dosed freely with quinine, upon the supposition that his fever was malarial. The intestinal rupture seemed to have been brought on by a walk of about a mile in length which he had asked permission to take.

I never saw, in my whole army experience, a case of heatstroke nor one of subacute thermic fever, nor any other cases of mountain fever than those just mentioned.

At Fort Elliott, Texas, which is about 3500 feet above sea-level, I had considerable civil practice and quite an opportunity to observe the women of the country. There are always in and about army posts a considerable number of women and children; I mention these facts to give proper weight to what I am about to say. Among the newcomers in these regions disorders of menstruation were exceedingly common, but were not, in my experience, more frequent nor more severe or protracted than are the same disorders among the German, Swedish, and especially the Irish immigrants whom I now see in my practice. Nor do I think that nervous or mental troubles were more severe or intractable than they are on the seaboard, and this in spite of the poor and restricted regimen and dearth of amusements and of intellectual pursuits. One great privation which we experienced in practicing medicine in Texas and New Mexico was the want of milk and fresh butter. This want is no doubt now better supplied than it was ten or fifteen years ago, when the cattle were mainly wild range cattle and no one thought it worth while to "gentle" the cows and milk them.

From a surgical aspect the virtues of the aseptic climate of the Rocky Mountains and their foot-hills are too well known to require any detailed testimony from me. Wounds always did well. I saw the knee-joint opened and a floating cartilage fished out without aseptic precautions or antiseptic treatment, and the man was entirely well in two or three days. I reported a gunshot wound of the liver followed by complete recovery in July, 1881. I saw several cases in which bullets went completely through the lungs, with recovery. I reported two cases of double, compound, comminuted fracture (gunshot) of the extremities in the Medical Record of July 16, 1887, one of both arms, and the other of both legs, with recovery.

I quote from the closing paragraphs of that report: "It would not be just to omit to mention of the action of wounds in the climate of New Mexico, which is so dry, so equable, so mild and delightful. * * * The efficaciousness of the climate in lung complaints is well known, and its salubrity, shown in the healing of wounds, is, I believe, as great, although, perhaps, not so familiar to the profession." It was then pointed out that in treating the wounds described no proper antisepsis was carried out, and yet they healed kindly, although they had certainly been exposed to infection for hours before they were dressed at all. The report then proceeds: "The beneficial action of the climate of New Mexico, upon consumption and wounds alike, might be construed as supporting the theory of the local origin of phthisis. At all events, wounded surfaces and diseased lungs enjoy a remarkable opportunity to recover in the localities mentioned." This was written before the writer knew anything of the tubercle bacillus, and when he knew very little about the means of the infection of wounds.

Of diseases among the Indians, I saw but little. They seemed, in the Indian Territory, quite susceptible to malaria and had learned to beg for quinine, which they took greedily. Those who could talk a little English would hold out their hands and ask for "white powder." If a small amount was poured into the palm, the applicant would say "heap, heap!"

While campaigning, or "scouting," as it is generally called, with Indian scouts I have heard them coughing all night long, and was told by the officer in command that they were very subject to colds, especially after they had taken a sweat bath. Once in a while, probably every two or three months, the New Mexican Indian builds a little oven or tent of withes and covers it with skins until it is nearly air-tight. He then heats a number of stones and lays them upon the floor of the little oven and covers them with a blanket. He will then crawl in himself and lie there and sweat for two or three hours, after which he will run and plunge naked into an ice-cold stream. This procedure often resulted in severe colds. Whether it had always been followed by colds, or whether the red man is deteriorating physically and takes cold more easily than he formerly did, I am not aware. But the impression among white men who were familiar with their ways of life was that they could not endure as much as they once could.

I saw one young Indian, to all appearance dying of consumption, at Anadarko, I. T., and was told that he had returned not very long before from the Carlisle school. It would appear that phthisis is not an unfrequent result of the higher education among the red men as well as among the pale faces. I do not remember having seen a case of phthisis among the whites in the Indian Territory. That it may exist among the Indians and not among the whites of the same locality, Surgeons Chase and Barker (Bell's Climatology and Mineral Springs of the United States, p. 234) assert in describing the climate of Washington Territory. They say "Not a case of phthisis originated in the place, but two or three cases which were imported improved rapidly under treatment. Phthisis, however, is very prevalent and very fatal among the Indians."

We perhaps too often lose sight of the fact that phthisis is especially the disease that cuts off those who have given up a roving or out-door life for a stationary or confined existence. It is the disease which destroys those who have exchanged a favorable for a less favorable environment or occupation. The mere moving about, even to less salubrious climates, appears to prevent the oncome of this malady. It has been pointed out (Dr. Louis Robinson, National Review, quoted by Dr. St. Clair Thomson, Therapeutic Gazette, 1896, p. 570) that the animals in a traveling menagerie are much healthier than those of the zoological gardens, although in the latter place they have every care and attention that science can suggest. The same writer speaks of the remarkable healthiness of gypsy children. He thinks that man was so long a wanderer on the face of the earth, constantly shifting his quarters to hunt for food, escape from or pursue his enemies, and so on, that we are stamped with a nomadic tendency and that it shows itself at times in a craving for change of air.

That this theory may be a correct explanation of the undoubted benefit which change merely as change frequently confers upon the health, I think is rendered probable by the physical history of the Indians. I do not believe that a case of phthisis was ever known among them until they were confined more or less permanently to one spot and prevented from going upon their hunting and war-like excursions. Now, like the caged animals in the museums, they are beginning to die of tuberculosis.

This is not because the modern Indian has given up living in tents and is thus deprived of the accustomed amount of fresh air. His unerring instinct warns him not to live in the houses which mistaken philanthropy or enterprising government contractors have in some instances built for him. He may consent to keep his ponies in the houses, especially in stormy weather, but he will not live in them himself.

These thoughts lead to the suggestion that we are often too ambitious in ordering our patients change of air. They do not need to go a thousand or two miles to obtain fresh air, and that change in their way of living which their health demands. They need more hygiene, more exercise, more sunlight, and probably a better diet. The immunity of sailors from phthisis is too well known to require comment. In these days of rational therapeutics, now that we cure typhoid fever and heart disease by bathing and exercise, myxedema by a special food, idiocy by graduated educational exercises, scurvy and rickets by a change of diet, and so on, why should we not inaugurate a system of treating phthisis by establishing roaming bands of consumptives, who shall live in the open air, and wander from place to place, not living in institutions or sanitaria, but in wild, free nature? Dr. Henry I. Bowditch's father seemed to cure himself of phthisis by a carriage journey from Boston to Albany (Transactions Amer. Climatological Asso., 1889), and his making his children take a daily walk of two or three miles is an example to us all. I still revere the memory of my own father, who caused me to walk to school and back every day. The distance was two and a half miles. Regular, systematic, not too severe exercise in the open air every day is what is needed to establish and develop such a constitution in the growing child that he will not be liable to phthisis.

However, this paper is already too long. I would sum up my observations as follows:

1. That the change of climate from the Rocky Mountains to the seaboard is more severe and dangerous than the reverse, especially to young children and horses.

2. That a medium or even high altitude is rather beneficial than otherwise to nervous dieases and the diseases of women, as well as to phthisis, and is not unfavorable to rheumatism.

3. That in the climate of Northern Texas and New Mexico nephritis in all forms is exceedingly rare, while aneurism is somewhat common in the latter territory.

4. Wounds do remarkably well in all the parts of the Southwest in which I served, even in Fort Sill, which is unhealthy by reason of malaria.

5. That the ideally wholesome and satisfactory life is a nomadic one.

6. Let us remember that coelum (the proper translation of coelum in this line is "climate." See note to Lincoln's "Horace," line 27, Epistle xi., Epistles of Horace, Book I.) non animum mutant qui trans mare currunt. Change of climate does not

bring change of disposition, nor, for that matter, of predisposition. Precious and even invaluable as change of climate often is in a number of diseased conditions, it is not always what is most needed.

Let us more often be content with smaller doses of climate and supplement them with larger doses of hygiene, both moral and physical.

THE COLD TUB.

The need of dogmatic medical guidance to the average medical man is nowhere more in evidence than in the matter of the cold tub. Some men there are who bathe in the open, year in and year out, and many more who every morning plunge into cold water under the somewhat tempering shelter of their own rooftree. For the most part, such folk doubtless thrive and remain vigorous, but then it must be borne in mind that only the robust would brave such Spartan discipline. But what has medicine to say on so important a point of everyday life ? So far as we know, there is no authoritatively and generally accepted dogma on the point. That which braces up the nerve-centres and circulation of the strong man might be full of danger to the weakling. So, too, with age ; as the elasticity of the arteries decreases with the lapse of years, by just so much increases the risk of a sudden strain upon the capacity of the blood-distributing system. Out of all the tangle of nescience upon this subject one or two solid facts, or what appear to be such, rear their stubborn heads. For instance, who will gainsay the dictum that the chief test of fitness for the cold bath is the individual power of establishing reaction ; in other words, of getting the delightful afterglow and warmth of the skin that should follow vigorous "toweling." Secondly, many people who seldom or never take a bath are, like our ancestors, healthy and long-lived. In spite of that negative evidence, however, we would advise a morning tub to all our readers, cold for those who can stand it, tepid for weaker and less resolute brethren, and warm for the aged. But even this general indication must be carefully modified to suit particular cases. The wise citizen will consult his medical adviser upon this weighty matter of daily routine.—*Medical Press and Circular*.

THE ANNALS OF HYGIENE
PUBLISHED MONTHLY
SUBSCRIPTION TWO DOLLARS A YEAR, IN ADVANCE.
Address all communications to
HYGIENIC PUBLISHING COMPANY.

All subscriptions to "THE ANNALS OF HYGIENE" are taken "until ordered discontinued," and no agent has authority to make any other arrangement. At end of time to which subscription has been paid or promised, a bill for a year in advance, with return envelope, is sent, and if journal is no longer wanted, the subscriber should mark "Discontinue" on the bill and return to us. A failure to so return bill is considered an order to continue.

COMMUNICATIONS SOLICITED.

We are always anxious to receive short communications—500 to 1000 words—on practical subjects pertaining to hygiene. To any one sending us an acceptable article, we will forward THE ANNALS OF HYGIENE for one year *free*.

MUNICIPAL HYGIENE.

LONDON'S MANY NOISES.

(Continued from page 461)

AS for the yelling venders of wares, there's no end to them. Morning and afternoon the milk boys yodle up and down the residential streets. Their din is as frightful as it is unnecessary. Chimney sweeps go along brawling; sooty men driving loads of coal in sacks cry till their throats crack; men who peddle flowers, or vegetables, or pork pies, kindling wood, fruit, cats' meat, evening papers, fly catchers, brooms, penny ices, or who buy old bottles, boots, rags, bags, and pots and pans, keep up their shrieks from breakfast until dusk.

And then the muffin man comes with his bell.

There are several thousands of miles of streets in London, and all of them know these yelling merchants, these squalling beggars, these blatant brass bands, these grinders of pianos.

There are some silly souls who think it would be a pity to do away with all the tumult. Servants encourage the noise. They like it. The mistress of the house may resent the uproar, but the cook and the housemaid subsidize the uproarious with pennies.

They are the chief offenders, but there are householders who combine in the crime.

The piano-organ curse develops yearly. Formerly one piano a day would be trundled through your street, pausing every fifty yards or so to grind out its metallic rattle, but now two an hour is the fair average, and the worst of it is that the two frequently come together and engage in combat at a distance of 100 paces. The effect is maddening.

The new dodge is to have a vocalist with each piano. Tongue cannot tell the heinous results of this combination.

The luckless taxpayer casts about for remedy, and finds none. His sleep is broken; his hours for study or quiet work are bombarded with dreadful sounds; he is awakened at untimely hours; his ear knows no rest; he becomes nervous, irritable; he develops a sudden passion for information about Maxim guns and dynamite torpedoes.

The din of the peddlers and the street performers is all but ceaseless. On the three nights of the week when the worst band does not come, the one that's next worse grunts and groans.

Here is a fair day's count from 9 A. M. till midnight: Four brass bands, nine street pianos, five singing beggars, one comic vocalist, a burnt-cork minstrel troupe, a dancing bear led by a man with a drum, a Punch and Judy show with drum, two cornetist, one fiend with a flute, seven milkmen, eleven peddlers, two chimney sweeps, two concertina processions, and three groups of intoxicated choristers. There is something like one disturbance every fifteen minutes for fifteen hours!

What wonder, then, that a Society for the Prevention of Street Noises has been organized? It has not got much further than organization, and it is not likely to become popular, for the world loves noise, in spite of nervous diseases.

But the society proposes action. It will first take cases into court. There it will in all probability be beaten. The liberty of the subject to deafen his fellow subject must not be abridged. That is the way sapient magistrates will rule. If the society would slyly bribe the noise makers to stir their racket before the magistrates' houses—that would be missionary work.

The obvious recourse will be to Parliament.

And who can prophesy what Parliament will do? No doubt the country members like the pandemonium. To them it gives proof of metropolitan life. Besides, there is no philanthropy in this movement for the protection of peaceable people's nerves. There is no chance for glory in putting the essential bill before the House of Commons, and there are no votes to catch, I fear. It may be that the last resort will be the Maxim gun and the dynamite torpedo.

At any rate, the only chance that the Londoner has for quiet now is to go to prison, or to leave town. In these resorts, however, he could hardly promote his business. The chances are that the noise plague must become much worse before it is abated, but how it can ever be much worse than now one dares not think. Civilization is capable of inventing new terrors.

In no other capital with which I am acquainted are noise mongers so free to disturb the peace. Some kind of check is imposed upon street performers and peddlers; some kind of control is exercised upon them, But in London liberty reigns—liberty to disturb the peace in the name of a lawful occupation. To be sure, the law says that no one may cause an obstruction to foot or vehicle traffic; but of what use is that law in a residential street? It does not meet the case. Salvation Army bands may bang through the thoroughfares as often as they please, and as long as they please. Any band may, and that freedom aggravates the misery of persons predisposed to quiet.

You have heard of "the quiet London Sunday." It does not exist. It may have been known in past years, but it is unknown now. It is a day of street preaching, of psalm singing at street corners, of charity parades, in which workmen's societies, led by bands which have never worked hard enough to master their instruments, career through the town taking up collections. Sunday is the day of the drum, the cornet, and trombone, the tambourine and wheezy reed organ; the day of outdoor exhortation, of labor demonstrations in Hyde Park, and, after 6 P. M., of beery revel in every public house. It is a day of bell ringing. "The quiet London Sunday!"

You who do not know him well are accustomed to think the

Englishman a sedate and quiet person, but the Englishman of "the masses" is nothing of the sort. He is the noisiest man alive. He will surpass your Irishman or your Gaul any day in the production of mere sound. He is passionately fond of "demonstrations." He is always demonstrating, always provoking the gods with processions, always holding mass meetings. He is a decidedly emotional creature when he is in a crowd. I grant that it takes a crowd to stir his emotions. When he comes singly, though, he can stir his tongue with energy enough.

Hear him now as he reels home in the small hours, howling the last song of the music halls and awakening everybody in every house that he passes. He meets a dozen kindred souls at a near corner, and, having met, they bawl together.

When you first hear this sort of thing in London you think there is a riot afoot. No riot ever made such a preposterous row. None but the musical cockney in his cups could so shake the heavens with a pair of lungs.

London, in its long history, has suffered many plagues, but its noises surpass the Black Death in terror.

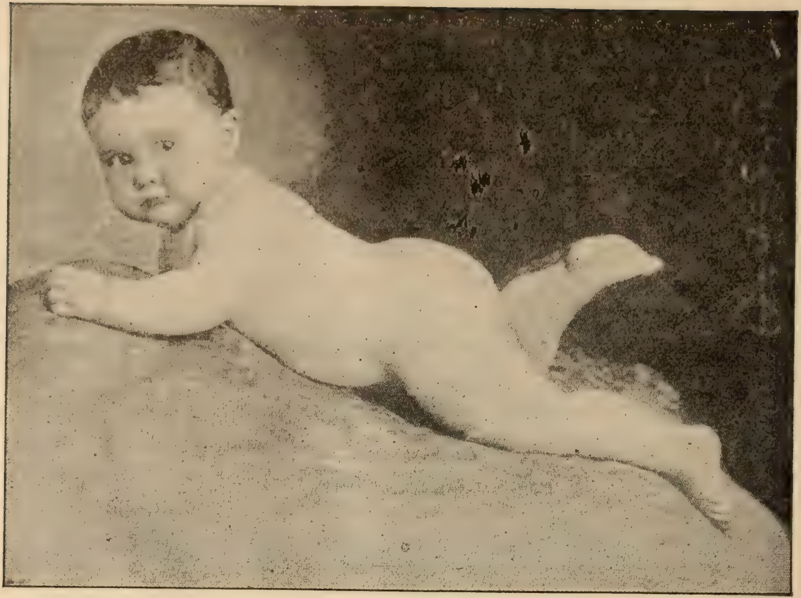
DIETETICS.

We used to have old-fashioned things, like hominy and greens,
We used to have just common soup, made out of pork and beans;
But now it's *bouillon*, *consomme*, and things made from a book,
And *Pot a Feu* and *Julienne* since my daughter's learned to cook.

We used to have a piece of beef—just ordinary meat,
And pickled pigs'-feet, spare ribs too, and other things to eat;
While now it's *fillet* with *ragout*, and leg of mutton *braised*,
And macaroni *au gratin* and sheep's head *Hollandaised;*
Escollaps a la Versailles—a la this and *a la* that—
And sweetbread *a la Dieppoise*, it's enough to kill a cat!
But while I suffer deeply, I invariably look
As if I were delighted, 'cause my daughter learned to cook.

We have a lot of salad things, with dressing *mayonnaise;*
In place of oysters, blue points, fricaseed a dozen ways,
And orange roley poley, float, and peach *meringue*, alas—
Enough to wreck a stomach that is made of plated brass!
The good old things have passed away, in silent, sad retreat;
We've lots of highfalutin' things, but nothing much to eat.
And while I never say a word, and always pleasant look,
I have had sore dyspepsy since my daughter's learned to cook.

—*Southwestern Medical Record.*



HYGIENE FOR THE CHILDREN.

CONSTIPATION IN YOUNG CHILDREN.

THE late Prof. Charles W. Earle once said to his class, " Don't dose the little people with drugs; keep them clean, feed them properly, and see that their bowels are kept open." The latter is often a hard task. Constipation is not a disease; it is a symptom. The cause should always be looked for before beginning the treatment. A healthy infant should have two, three, or even four evacuations in twenty-four hours; an older child always one or two. These should be yellow and unformed in very young children, the color and consistency changing with the age, gradually becoming formed and darker.

The causes of chronic constipation, as a rule, are either from some pathological condition of the intestines or indigestion, or it is the accompaniment of some of the constitutional diseases and those of the central nervous system.

Anatomically the intestines of an infant tend to produce constipation. The small intestine is comparatively longer, and the lumen narrower, than in an adult, as is the cul-de-sac in the sigmoid flexure; the length of the descending colon, small, contracted pelvis, feeble peristalsis, certain pathological conditions, fissure of the anus; sometimes large masses of worms, a diminution in the amount of water or intestinal secretions, and from improper food. Bottle-fed infants, on whom ''every kind of food has been tried,'' are the hardest to manage. This is due to errors in feeding, human and cow's milk being two different things. Constipation is often caused by the lack of fat and too large a proportion of albuminoids, cow's milk containing less fat and less sugar than human milk. Thanks to Prof. Roach, of Boston, we can now have milk prepared at the laboratory by the physician's prescription, in proper proportions to suit each case and so overcome a great difficulty. Infants are often fed on starchy foods and some of the heaviest prepared foods long before the saliva has appeared to do its work in digestion.

A child was brought lately to one of the day nurseries suffering with marasmus and constipation. The mother was poor and ignorant. She had been feeding the baby, a four months' old boy, ever since its birth, on cracker crumbs soaked in milk and hot water, and fed out of a spoon. She thought ''bottles not healthy.'' Her children, she said, were all born healthy, but ''just pined away.'' She had lost three. The child was put on modified milk and somatose, with a small dose of cod liver oil, and it certainly is improving. The constipation is being overcome by the diet with no medicine.

Constipation is often the after effect of diarrhœa and the long continued use of those household remedies, castor oil and rhubarb, or repeated use of enema. In the older children, lack of attention, irregular hours, indoor life and lack of exercise, and that pernicious habit practiced by so many mothers of tieing a child, as soon as it can sit alone, on a ''chair,'' with plenty of toys to amuse it, and leaving it often for an hour or more. The child can easily be taught that the chair is for one purpose only, and a few moments' attention from the mother or nurse, minus playthings or entertaining, will soon establish regular habits.

Another important factor is the lack of fluids. It never seems to occur to many mothers that a child gets thirsty and needs a drink of water, not milk. A baby should always be ordered a drink of water, either a little in a bottle or from a teaspoon, three or four times a day. When they get restless and fretful, and it is not feeding time, a drink will often restore them to good nature.

In the treatment of chronic constipation always look for the cause before giving drugs. If there is some congenital structural difficulty that will not yield to treatment, it should be overcome as much as possible. It is always admissable with a constipated breast-fed infant to have the milk analyzed, and if it is not normal, to improve the diet of the mother or supplement the lacking constituents, and if normal a laxative diet will often accomplish the purpose. In a bottle-fed baby nothing is so efficient for feeding as the modified milk. The fat may be increased and the food thoroughly tested each day until the right proportions of fat and casein, suited to the individual case, are found.

Massage will often work wonders. A gentle kneading of the abdomen with the tips of the fingers stroking the ascending, transverse and descending colon. A little sweet oil may be used. This should be done faithfully, five minutes at a time, morning and evening.

In children over two years of age diet is all important. It is a common theory among the laity that milk is constipating. This is untrue if it is prepared as it should be. To half a glass of milk add two tablespoonfuls of cream and two of water. This will approximately give the right proportions of fat and casein. A starchy diet should be prohibited. The bread must be graham, or graham crackers. A good diet for a constipated child of three years, is to give the squeezed juice of an orange the first thing in the morning. In older children a small glass of one of the natural sparkling waters will accomplish a great deal. If the ''bad taste'' is an objection, a little simple syrup in the glass will overcome the difficulty, and the ''soda water'' is easily taken. The breakfast should consist of oatmeal and cream, a glass of milk modified, a soft boiled egg with brown bread and butter. The heavy meal, which should always be given at noon, should be a piece of tender beef or mutton, a baked potato and a green vegetable. For a desert a baked apple or stewed prunes, in summer very ripe fresh fruit and a molasses cookie. Often a peeled raw apple will be very effectual. The supper, which should be taken an hour before bedtime, may be some grits sweetened with molasses or cream toast, plenty of bread and butter, with some stewed fruit or fruit jelly. A small quantity of homemade molasses candy will delight the child and help the constipation. It should be remembered in ordering fruit for children that berries should never be given to a child under seven, and very sparingly even then.

A suppository that will stimulate the rectum is often all that is required. This is especially true of infants. Suppositories made of a cone of oiled paper or castile soap are most commonly used, and must always be used the same hour each day. Of the medicated suppositories the pure glycerine or gluten ones are the best, the former being the most prompt, the latter, though slower in action, producing less irritation. If medicine is necessary it should always be given first by the rectum, before disturbing the digestion of a child by giving it by the mouth, A suppository containing small doses of aloes, nux vomica, belladonna and sulphur in cocoa butter, given night and morning, gradually decreasing the size of the doses, and giving only one a day after improvement occurs.

Enemas should never be depended upon to effect a cure. They are only useful temporarily. When absolutely necessary a drachm of glycerine to an ounce of water is the best. When there is fecal impaction, castor oil and oxgall in hot water may be used. Sometimes warm olive oil may be injected into the rectum, and after that has been cleared out, and if the trouble is higher up, use a soap and glycerine enema, given with a rectal tube. Injecting a small quantity of yeast has proved very successful. In one case, after trying everything, a gradual dilating of the rectum accomplished a cure. In obstinate cases an examination of the rectum should always be made, if necessary, under an anesthetic, and neoplasms or stricture treated accordingly.

Medicines given by the mouth are very unsatisfactory for chronic constipation. Often in anemic children a tonic with iron, quinine and strychinine, and diet are all that is necessary. The best drug is either the third extract or the aromatic elixir of cascara segrada, preferably the latter, on account of the taste, given in small doses, always remembering that continued small doses are more effectual than an occasional large one. Where there is much flatulence and the stools are very light colored, give small doses of calomel and soda bicarbonate for four or five nights, followed in the morning with some mineral "soda water." Castor oil should never be given for constipation, nor rhubarb, on account of its astringent qualities.

Galvanism is not very successful with children, especially with those of nervous temperament, though in cases where it can be used it is very effectual and should be tried after other measures fail. The most reliable cases are in those children in whom absolutely regular habits and diet are insisted upon. Drugs should only be a last resort.—EDITH A. H. FYFFE, M.D., *Woman's Medical Journal.*

EFFECTS OF CIGARETTE SMOKE UPON CHILDREN AND YOUTH.

The subject is an old one, one that has long since been laid aside for others more recent and interesting, yet if we observe that the habit of cigarette smoking is constantly increasing among boys, it should demand our attention to-day.

What is there about tobacco smoke so injurious to the young? Analyzing the smoke from tobacco, it is found to contain water in the form of vapor, free carbon in minute particles, ammonia compounds in a state of vapor, carbonic oxide and nicotine, a complex substance, which, when analyzed, is found to contain a fluid alkaloid—nicotine proper, a volatile substance containing ammonia, and a bitter resinous extract. Numerous other substances are often produced, but those mentioned are always present, and to them can be traced the evil effects of smoking. These are more readily taken into the lungs when smoking cigars or cigarettes than when a pipe is used, as the stem of a pipe, if porous and clean, absorbs the nicotine.

Dr. Richardson says that when tobacco is used, the blood becomes thinner and, in extreme cases, paler. Examined microscopically, the red blood corpuscles are found fewer in number, and to lie widely separated, the tendency to form into rouleaux being lost. The form is changed from the double concave and smooth border, to an oval form with crenated border, indicating a a change in the density of the plasma. The ammonias have the effect of dissolving the blood corpuscles, the absorption of the blood of the various poisons inhaled when smoking, lessens the oxygen-carrying power, hence oxidation of the tissues is partially arrested and their disintegration retarded. The poisonous products are quickly eliminated through the lungs, kidneys and skin, and one day of abstinence from the use of tobacco is sufficient to restore the blood to its normal condition.

The influence upon the heart is that of a functional derangement producing irregularity of action, due to the poisonous effect of nicotine upon the nerves controlling its action. The symptoms are those of palpitation, dyspnea, and sometimes pain.

Upon the nervous system the poison, nicotine, has a decided effect. It paralyzes the nerves controlling the muscles of the iris, and consequently the pupil becomes widely dilated. The symptoms produced are obscurity of vision, specks before the eyes, and sometimes deep-seated pain. Upon the exhausted brain it has a soothing effect; upon the fully nourished brain it acts as an irritant. In extreme cases the most pronounced effect is that upon the cord, both the sensory and motor nerves of which may be affected, as shown in external insensibility, convulsions and paralysis. Death results from respiratory failure due to spasm of the chest muscles, or from paralysis of the heart.

Through the sympathetic nervous system the secretions are disturbed, also the regulation of involuntary muscular contraction, as shown by the muscular spasm of the stomach and by the vomiting produced on the first attempt at smoking. The nerves controlling the secretions of the glands are affected in such a way as to cause oversecretion, and, if tobacco is excessively used, secretions may become uncontrolable. In the majority of smokers the salivary glands are excited to oversecretion, and if the saliva is swallowed it conveys to the stomach the poisons, nicotine and bitter extract. These irritate the mucous membrane and cause inflammation. Irregular secretion of the gastric juices follows, and often a deficient is produced, causing dyspepsia and loss of appetite.

The muscular contraction of the stomach and intestines is increased. In moderate smokers this acts as an aperient; but if smoking is carried to an excess the muscles may become paralyzed and constipation result. These disturbances being functional the tissues quickly regain their normal condition when tobacco is not used.

Although the salivary secretion is increased, the mucous membrane of tongue and throat becomes dry and irritable, due to the ammonia inhaled. The gums may become firm and contracted, or vascular and sore with a tendency to bleed. In the smoker's sore throat, the mucous membrane is inflamed, the tonsils enlarged and soft, causing pain on swallowing.

Free carbon is deposited upon the teeth, discoloring them, but acting, it is thought, as an antiseptic and preservative. Inhaled into the lungs it acts as a mechanical irritant to the mucous membrane of the bronchial tubes, and if bronchitis be present, it maintains an irritable state of the membrane and keeps up the cough. It cannot be said to cause directly any organic disease of the lungs; but the absorption by the blood of the various poisons inhaled causes a general enfeeblement of the system—the carbonic acid and oxide causing incomplete oxidation of the blood, the nicotine producing various nervous phenomena, and the ammonia compounds having a solvent power upon the blood corpuscles. Thus, by lessening the bodily vigor, the person is unable to withstand disease, and if he inherits weak lungs, may easily become a prey to the tubercular bacilli.—S. SEVERSON, M D., in *Paœdiatrics.*

CONVULSIONS IN INFANTS AND CHILDREN.

Convulsions from whatsoever cause require prompt and efficient treatment. They themselves may produce serious damage, accompanied as they are by hyperæmia of the brain, more or less asphyxia, congestion of the lungs, and of the various internal organs, thus throwing a great strain upon the heart, its valves, and upon the capillary vessels, and profoundly exciting the nerve centers. This tremendous disturbance may go on if unrelieved, and result in death. The general plan of treatment now to be outlined will do no harm, and probably relieve most of the commoner causes which induce the motor excitement. The articles required are a bottle of chloroform, or ether (or the mixture we use in whooping-cough, amyl nitrate one dram, chloroform three drams, ether five drams,) also a bottle containing a solution of chloral five grains to the dram, a cylinder of oxygen, a hypodermic syringe, morphine, a soft rubber catheter, a fountain syringe, a clinical thermometer, and three or four rolls of cotton wool.

On reaching the scene of action let him direct each of the bystanders to get various objects which may be needed, sending one person after each, and thus clear the room, collecting blankets, sheets, large towels, preferably bath towels, mustard, hot water, a bath, thermometer, etc. The child will usually be found already in a bath, which is often so hot as to injure the skin, producing sometimes quite serious results. Take it out at once. If the bath contain mustard it may be so strong as to require rinsing off, and the application of some emolient, as petrolatum, and to wrap the child up in soft cotton wool, which, in any event, is a useful covering after the bath. If the child has not been overtreated by domestic zeal and remedies, proceed to apply a hot pack at once, to which a little added mustard is useful, a teaspoonful to the quart of tepid water, 75° or 80°, in which dip a large bath towel or sheet and wrap around the child, covering it with a blanket, and leave it thus from ten to twenty minutes. Meanwhile, apply the chloroform or ether to the nose, and give a large injection of hot water, 95° to 100°, to the bowel. While the child is thus resting, one can proceed to examine into the history of the case, and, explore the lungs and heart, and, when possible, get specimens of urine and examine for albumin. Look into the nose and ears for foreign bodies, etc. Examine the penis for phimosis. The temperature should be taken. If subnormal, use stimulants. The hot injection acts well, helping to relieve the overtaxed heart to equalize the circulation, dilate the peripheral vessels, and also assist in unloading the bowels and intestines, or, at any rate, in liquefying the fæces. If the temperature be found high, the heat will relieve capillary congestion, relaxing the superficial vessels and expedite heat elimination. The hot injection can be followed later by cold injections, 50° or 55°. Also in hyperpyrexia, and, indeed, in most cases, except shock, it is well to apply cold to the head. If the convulsion be very excessive, or unduly prolonged, there need be no hesitation in using a hypodermic of morphine, to a six months' old baby one-forty-eighth of a grain, to a babe of one year old one-twenty-fourth, or two years' old one-sixteenth, and these may be repeated in an hour or two if no effect is gained. The second dose may be double the size of the first, for, during convulsions, the tolerance of opium is very great. Where there is asphyxia, oxygen is a valuable agent. Also chloral may be given by the rectum in warm water or milk, four grains to a six months' old baby, six grains to one of a year, and repeated in an hour.

Gradually a knowledge can be acquired of what the definite cause may be, whether by shock, fright, chill, heat, exhaustion, sunstroke, congestion of the lungs, toxemia, overloaded intestines, the beginning of an exanthem, or other fever, or cerebral disease. It is proper also, in most cases, to administer a purgative by the mouth, as calomel, or, if the constipation be obstinate, croton oil, half a drop to a drop in glycerine or whiskey. We have seen this save life when the cause was coarse, undigested food partaken of three days previously and the child had been abandoned to die. If the temperature remains excessively high, a cold pack may be used after the hot one, and whatever other remedies the nature of the case may require. A child who has convulsions, especially if these exhibit a tendency to recur, must be kept absolutely quiet and fed in the simplest fashion, altogether by fluids, for several days. When the nature of the case is clearly revealed, one proceeds to treat that as required.—*Philadelphia Polyclinic.*

THE USES OF SUPPOSITORIES IN CHILDREN.

Owing to the sensitiveness of the digestive tract in children, and the ease with which its condition may be disturbed by medication, *La Medicine Moderne* makes a plea for the more extensive use of medicated rectal suppositories. The medicine in these suppositories must be in a state capable of rapid and complete absorption, and the vehicle also must be considered. Cocoa butter does not remain sufficiently long in situ. The ideal vehicle is found in a mixture of gelatine and glycerine, recommended by Chaumel.

A case of complete and immediate relief from the effects of ivy poisoning is reported in The Medical World by Dr. W. L. Shanks. His patient was swollen from head to foot, and in an hour after bathing in a solution of sodium hyposulfide was attending to business as if nothing had happened.

PUNISHMENT.

BY TUDOR JENKS.

I know she said I'd break the cup;
Somehow it slipped, and down it fell.
Then Mamma had to send me up
Here—where it seems like a prison cell.
I hear the crickets in the grass,
Chirping when all else is still.
I hear the puffing engine pass,
And now!—that was the whippoorwill!
Poor Will—for you were naughty, too;
Or else why should poor Will be whipped?
Why did your mother punish you?
Was it another cup that slipped?
Poor mother!—for she really cried.
That cup was different from the rest;
'Twas brother John's—the one that died—
The boy that mother loved the best.
And now 'tis broken. Why—she's here!
May I come down? I'll really try—
Oh, I'm so sorry, mother, dear,
I cannot bear to see you cry!

MEDICAL ASPECT OF THE CHILD'S EDUCATION.

Dr. W. H. Prescott, before the Norfolk District Medical Society, read a most interesting paper on the position of the medical man in the child-education of to-day. He believes that after the birth of the child its training should begin immediately. A baby should be fed at regular intervals, and between feedings should never be disturbed except for necessary attention. He protests against the fondlings, and tossings, and caressings, which so many babies have to endure.

In the second period the baby should be kept as quiet as possible during the greater part of the time, but an hour or so a day should be devoted to healthful exercise. The author decries the custom of overdressing children; he believes there is more danger from overdressing than from underdressing.

After a child has entered school the physician's advice is of the utmost importance. Fifteen years ago an investigation of the Boston schools was made, and it was found that there were only a few sizes of desks and seats; each child was supposed to accommodate himself to the desk to which he was assigned. There were numerous cases observed where a child's legs were too long to put under the desk without cramping or twisting. In such cases the back and chest were in bad position, endangering the child's health and growth.

The lighting of the rooms and the color of the ceiling are points upon which the physician may be consulted and upon which he should be informed. Arsenical poisoning is said to have occurred in a school-boy in whom arsenic was discovered in the urine, and the cause was found in the paint on the walls of the school-room.

The author treats of the far-reaching effect that the schools have on the spread of contagious disease. He shows by referring to a table published by the Boston Board of Health that diphtheria is least prevalent when the schools are closed during the vacations.

In 1894 the following recommendations made to the school committee were adopted in part: The desks, chairs, window-sills, door-knobs and everything else likely to be handled by the children should be carefully rubbed with cloths wet with a solu- of bichloride 1 : 1000, and the floors covered with sawdust wet with the same solution and then swept while wet. Also that the use of slates and slate-pencils, be discontinued, and paper and lead-pencils substituted. Any book known to have been handled by a child suffering with a contagious disease should be immediately burned.

In the fall of 1894, upon the advice of the Board of Health of Boston, a system of school inspection was instituted. The city was divided into fifty districts, giving an average of four schools and 1400 pupils to each district. Thus fifty physicians were appointed. Their duties consisted of visiting each school in their district every day, and seeing those children whom the master wished them to see, to record their diagnoses and advice in a book kept for the purpose, to see every case of diphtheria and scarlet fever, in the district, and report the same to the Board of Health. When a child suffering from diphtheria, or scarlet fever, was reported ready for release from isolation, by the attending physician, the inspector visited the child at its home, and if consistent with the public health, he sanctioned his release.

THE STERILIZATION OF MILK.

BY KENYON WEST.

It sometimes happens that there are certain disadvantages connected with the use of milk. It may cause derangement of the infantile digestion, and even with older children it may not always assimilate well. Then, too, milk is susceptible of almost any taint of disease from unclean or unhealthful conditions either of the cows or the environment of the cows ; if the milkman has been where any contagious diseases are raging, milk, being a ready absorbent, may bring these dread maladies right into our homes; besides, it is subject to changes which, though at first almost imperceptible, gradually increase to the point of absolute fermentation. For many years the problem was how to prevent these changes. Chemicals have been used, intense cold has been tried, milk has been boiled; but inasmuch as the air is the developer or active agent in the growth of the germs which are at the root of the whole trouble, the final result is only delayed by cold; in boiling the air is not excluded and hence soon works its will upon the milk ; and in most cases chemicals render the milk unfit for food. It is here that sterilization proves itself so useful; it acts as a perfect preservative, and yet in no way alters the character of the milk. It also makes milk more easily digested, and increases its power of assimilation. A child will thrive upon a much smaller quantity of sterilized than unsterilized milk. Here is encouragement for those children who have small appetites ! Besides, sterilization renders milk free from contagion. Its practical value has been demonstrated under the writer's observation. A child of three years of age became so ill from drinking the milk from a feverish cow that his life was endangered; a baby living next door who used the same milk at the same time escaped with no harm whatever. In the latter case the milk had been sterilized by a watchful mother.

Now for a few practical hints for the sterilization of milk.

Put the milk which a child will require for one meal in a bottle with a generous-sized mouth. One with a rounded bottom is also preferable, because more easily cleansed. Have as many bottles as the child requires meals in the twenty-four hours. Let the milk come up to about two inches of the top. Cork with wads of pure cotton, which have been slightly browned in the oven. Put the bottles into a close steamer, and expose to heat for fully an hour. The older the milk is, the longer it will require to be steamed in order to eliminate the germs. If a long journey, like an ocean voyage, is to be taken, it is well to steam the milk immediately after milking, in order to guard against any chance of failure. Don't immerse the bottles in boiling water. Steam must be the agent in sterilization, in order not to change the character of the milk. Any kind of a steamer may do, but it is better to have one with two covers, one of which is called a hood.

It is obvious that after the milk has been once sterilized the air must be kept from it. Therefore the cotton must not be removed from the bottles till the child is ready to use the milk. If by any chance it has come out in the steamer, it must be replaced, and the bottle steamed a while longer. If it is desirable to carry the bottle on a journey, without the convenience of the rack to keep it upright, remove the cotton while the bottle is still hot in the steamer, substitute an ordinary well-fitting cork, replace the cover of the steamer, and let the process be carried on a few minutes longer. Then press the cork in firmly, and the milk will keep indefinitely.—From *The Outlook*.

NERVES.

A newspaper story going the rounds says that the little son of the Duke of York was asked the other day why he was not as cheerful as usual, and that he replied his "nerves" were troubling him. The story states that this resulted in a complete reorganization of the royal nursery. Nerves and childhood are not words to be linked together. It would be a healthful thing to have a law passed making it a minor offense, punishable with fine or imprisonment, to use the words nerve or nervous in the presence of a child. They are words that, like charity, are made to cover a multitude of sins. Temper, bad training, indigestion, lack of mental balance are politely or ignorantly termed nervousness, and the discipline that comes from bearing the natural results of our own actions lost.

That nursery, royal or tenement, needs reorganization where a little child has learned to use nerves as an excuse.

THE BABY'S BATH.

The hand is an unsafe guide by which to determine the temperature of the water. This should always be determined by the thermometer. A bath thermometer should, therefore, be a part of the equipment of every nursery. This consists of an ordinary thermometer of large size, set in a wooden case. The following table shows the proper temperature of the bath for various periods during the first two years:

At birth	100° F.
During the first month	97° F.
One to six months	95° F.
Six to twelve months	90° F.
One to two years	86° F.

Soap for the baby's bath is of importance. Soap containing an excess of alkali may seriously irritate a child's delicate skin and predispose it to erythema or eczema. The best grade of white castile soap is the most suitable for baby's use. The oatmeal soap of a good make may also be employed. Dr. Griffith regards the German soap known as Basis Seife as the best. It can be obtained through most druggists. A dusting powder is not necessary when the skin is in normal condition, and is properly dried after the bath. One of the chief objections to its use is the fact that nurses are prone to rely upon it, instead of taking proper care in drying the surface. When properly used there can be no objection to it.

[A way to determine if the soap will irritate baby's skin, is to touch it upon the tongue. If the tongue smarts do not use it. —Editor.]

CHILDREN'S PLAYGROUNDS.

The demand for children's playgrounds is the legitimate outgrowth of the movement for more small parks, although they have each different and distinct objects in view. The latter are designed almost exclusively as rest or breathing spots, the former to provide for the physical enjoyment and, inseparably connected with it, the moral welfare of the youth of the city. The full force of the children's playground is not yet entirely understood by the whole people, although they appreciate the value of the general proposition. Many fail to grasp the truth that physical exercise, carrying with it a healthful body, is one of the greatest aids imaginable in promoting the moral character of the young. A potent factor in bringing about a better understanding of this phase of the usefulness of children's play rounds is the timely publication of a book on the subject, by Stoyan Vasil Tsanoff, General Secretary of the Culture Extension League.

The whole purpose of this work, which is entitled "The Educational Value of Children's Playgrounds," is to impress the public with the value of such places from a moral, educational and utilitarian standpoint. Mr. Tsanoff says of these places:

"They are most important educational factors. They stimulate and guide life in a way nothing else can do. Their relation to development of character is very similar to that which the school bears toward the development of the mind. In fact, the collective play of the children has a greater influence in forming habits of personal and social conduct of life than has school or even home instructions and advices. Many practical questions, for the solution of which we have been looking to the school, the home or the Church, will be found to belong to the playground to solve. The time is coming when the playgrounds will be as seriously considered in the education of the young as the schools are considered to-day."

Mr. Tsanoff's plea is a strong and truthful one, and, having a fruitful field, he has presented a book well worth the attention of the humanitarian and the thoughtful minded. The rights of the children in crowded cities have been too long neglected, and to this neglect may be traced much of the increase of evil in city life. If, as the author of "Children's Playgrounds" points out, the little ones are taken from the gutter, the back alleys and the slums, where little that is good can be learned, and encouraged to visit and use play spots provided for them, where they will be surrounded by healthful and ennobling influences, and be under the care of responsible persons, the evil communications which corrupt good manners and morals must, in a great measure, be removed.—*Phila. Public Ledger*.

SOME POINTS IN THE TREATMENT OF CHILDREN'S DISEASES.

Dr. Edward P. Davis, in the *Philadelphia Polyclinic*, writes: " Barley water is prepared by adding one tablespoonful of barley grains to one pint of scalding hot water, allowing it to stand and then straining; it is a valuable addition to the diet, exerting an astringent action on the bowel in case of diarrhœa.

" Oatmeal water is prepared by the addition of one tablespoonful of oatmeal to the pint of scalding water, allowing it to stand; strained and administered, it exerts a laxative action.

" If the child vomits, is feverish and have frequent stools, the milk should be stopped altogether, or twenty-four to thirty-six hours, and albumen water substituted.

" Albumen water is prepared by adding the white of one raw egg to eight ounces of water; in addition the child should get light chicken or mutton broths or freshly extracted beef juice.

" Brandy and water form a good stimulant and may be administered in ten-drop doses six or eight times a day. The administration of a dose of castor oil, guarded by some brandy to prevent griping, is of exceeding value to clean out the irritating material from the intestines. Lavage of the intestines is of first importance in intestinal infantile disorders. It is usually accomplished by the use of a number eleven or twelve soft rubber catheter and a fountain syringe with one or two quarts of warm water. The best result is obtained if the infant is placed on its abdomen across the nurse's knee, the water being at a temperature of 100° F., and a little soda or salt water added to it. Great relief is obtained from the evacuation of the flatus and feces. In chronic cases some antiseptic and astringent must be added to the water, thus:

" Boric acid, one-half ounce to the quart; creolin, thirty drops to the quart; sodium salicylate, ten grains to the quart;

thymol, one part in two thousand; mercuric chloride, one part in ten thousand.

"The use of the solution of mercuric chloride should be followed by irrigation with warm water; this irrigation of the intestines not only removes the flatus and feces, but exerts a stimulant action upon the bowel."

THE SCIENCE OF THE MORNING FAST.

Parental ignorance, general ignorance that there is even an alphabet of nutrition, is black with heathenism. There is not even a hazy idea that digestion is chemistry, with its exactions and its moral, mental and physical conditions, and there is a hunger of disease that food never satisfies, and that there is a starvation from over-feeding that has in its wake disease, moral and intellectual wreckage, and death.

The evil work begins in the nursery, where there is no limit to the feedings or resulting end to the woes of restlessness, fretfulness, disease and death.

There are no human lives that can be made so perfectly peaceful as infantile lives, and yet if the end of the first year is reached with apparent health it will be due to an inherent strength of constitution.

The first step in every disease is the first morsel of food that fails to be fully digested. This results in an instant loss of general tone, with weak parts most affected. The vessels enlarge, with resulting strangling pressure on between structures, and in time a morbid condition called disease is reached, to be named, according to locality and character, as bronchial catarrh, asthma, rheumatism, eczema, etc. They all have a clearly ascertainable evolutionary history that does not involve a germ theory of origin or a germ treatment of relief, and it is barely possible that this is true of acute disease to a larger extent than is generally believed.

Every age has had its specifics, its special dispensations, whereby old disease accounts under a high pressure for immediate settlement are to be abolished by miracles, or through remission rather than expiation. That will be the golden age of living in which the causes of disease will be met at their very inception by a paralyzing specific and life made continuously happy through "salvation by grace" only.—*The Chautauquan.*

INFANTILE DIARRHŒA AND ITS TREATMENT BY STERILIZED WATER.

Watu advocates the treatment of infantile diarrhœa by a regime of boiled water, cooled to a suitable temperature, and given in small quantities every hour or half-hour, or as thirst demands, to the exclusion of all food, for eight, twelve, or even twenty-four hours. By diluting the irritating secretions, dislodging the debris of decomposed alimentary matter retained in the folds of the mucosa of the canal, increasing the pressure in the blood vessels and dissolving the toxins attached to the formal elements, the ingested water carries away and eliminates the poison from the system, changes the morbid character of the stools and effects a reduction of the temperature and recovery, especially when administered in acute cases at their commencement and in children not very young.

SOME REFLEX DISTURBANCES IN CHILDREN WITH REFERENCE TO CIRCUMCISION.*

Of my very first cases in private practice, one was that of petit mal just developing the grand mal, in which the patient, a two-year-old boy, was having twenty or more nodding spasms a day, and for a few days past, about one a day of attacks characterized by the outcry, the fall, the tonic, then clonic spasm, with complete loss of consciousness. The case having been the round of doctors, and the parents anxious to try any and every candidate for the business of curing the ills of life, came to me, at first cautiously, the father asking one day on a casual meeting what I thought of a case the symptoms of which were so and so. I told him the proper thing to do, before an opinion, would be to let me see and examine the patient. Something then and there related led to believe that the cause of these spasms might be of reflex origin. So, when asked to see the child I very soon reached the penis in the detailed examination, and found a much elongated and contracted prepuce adherent to the glans, and that the slightest handling caused erection. I also found that I could bring about the nodding spasm by irritation of the region over the frenum preputii. With the ardor of the unsophisticated I at once assured the mother that the child could be cured if she would permit a small surgical operation. This opinion was so unexpected and positive that the parents of the child rated me a fraud and declined to allow the operation. Eventually, however, after many inquiries they concluded I might try it, especially as they had learned it was that of "circumcision" and was found in the Bible, and was therefore right. And so the operation was done, the first ever done in that country as a remedy for disease, and as a result the child never had another spasm of any kind, and is now a young man of promise who does not even know that there was once a crisis in his life.

---

* Extract from a paper read at the Meeting of the Miami Valley Medical Society, by Dr. H. A. Beeson, Leesburg, O.

SIGNIFICANCE OF THE CHILD'S FONTANELLE.

Dr. Abt, in an interesting paper in *Medicine*, gives the following facts, of interest to all mothers: 1. Involution of the fontanelle occurs normally from the fifteenth to the eighteenth month. From birth to the ninth month the fontanelle decreases gradually in area, and from this time till complete closure the decrease is more rapid. Retardation of normal involution indicates rachitis or hydrocephalus. 2. The fontanelle presents pulsatory and respiratory phenomena. The pulsation increases if the tension is slightly increased: diminishes or is lost if the tension be greatly increased. 3. A murmur over the fontanelle occurs in a certain number of children, most commonly in those who are anemic or rachitic. It is not pathognomonic. 4. A slightly prominent and pulsating fontanelle indicates a cerebral hyperemia, such as occurs in fevers. 5. A protuberant and tense fontanelle indicates an exudation or inflammation in the cranial cavity. 6. Retracted fontanelle indicates a condition of collapse, brought about by acute intestinal disease with profuse watery discharges, infantile atrophy from any cause, hæmorrhage, effects of prolonged acute infectious disease, or marantic sinus thrombosis. 7. In acute infectious diseases with meningeal symptoms, examination of the fontanelle shows no protuberance or tension, whereas in true meningitis these conditions are marked. 8. In the so-called hydrocephaloid, a terminal condition of cholera infantum, marked by the occurrence of striking meningeal symptoms, the fontanelle is retracted.

PROTECT THE CHILDREN'S CLOTHING.

There is a strike now going on in New York City that ought to command the attention of every mother. The "knee pants" workers have struck for higher wages and shorter hours. The leaders state that over twenty per cent. of the "knee pants" shops are sweat-shops—that is, that the work is done in homes in violation of the law. The factory inspection laws forbid the manufacturing of garments in homes used as dwellings. The number of factory inspectors employed in New York is wholly inadequate to the area to be covered. The present strike, with this acknowledgment of the violation of the law from the workers, is a proof of advance in intelligence. That more inspectors are needed is painfully true. The protection of the purchasing public lies in the devising and the accepting of a label that will be a voucher that the garment was made under sanitary conditions and that a fair price was paid for its manufacture. The possibilities of deceit are recognized, but this danger is exaggerated by the enemies of the system and those who have not studied its application to the commodities thus protected. There is no subject that affects the nation more closely than the protection of the home from disease. That sweat-shops are an enemy to health and to the progress of the nation from the economic standpoint cannet be denied.—*The Outlook.*

HYGIENE IN ATHLETICS.

CYCLING FROM A HYGIENIC POINT OF VIEW.

Dr. Villaret, in the Medical Weeks, says: To determine exactly the ill effects possibly resulting from the use of the bicycle, it would be necessary to be able to estimate the expenditure of force by a cyclist in riding from one place to another. We know nothing of this, however, and under such circumstances we have no means of arriving at an intelligenut opinion as to the benefits or otherwise of cycling in the case of children, convalescents, etc.

It appears at any rate to be unquestionable that the heart of a bicyclist is easily overworked, because on account of the energetic construction of the muscles of the legs it receives a greater quantity of blood than it can dispose of.

As a matter of fact, the quantity of blood passing through a muscle at rest differs widely from that passing through the same muscle when contracted. Chauveau and Kauffman have ascertained that the blood in the muscle of a horse at rest is equivalent to seventeen per cent. of the weight of the muscle,whereas during contraction it contains eighty-five per cent. of its weight in blood.

It has been argued that if cycling is dangerous to the heart, cardiac affections would necessarily become more frequent among cyclists than they actually are; but we must bear in mind that cycling has only been fashionable for a few years, and that many of those who use the bicycle do so with moderation, that is to say, without interfering with the functions of the heart

For my own part, I prescribe cycling for aged people, and advise its use but very moderately by convalescents and persons with fatty heart.

On examination of a bicyclist who had ridden sixty kilometres, I found the pulse beating at the rate of 260 per minute when he got off his machine and 200 three hours later. It must be admitted that this implies an amount of overwork for the heart, which would necessarily entail serious evil effects if often repeated.

THE BICYCLE AND GYNECOLOGY.

It is natural that any new form of exercise when generally adopted and indiscriminately used by all ages and classes should be made the subject of extended and careful observation by those interested in the development and welfare of the race.

At the very outset many predictions were made of disease and disaster to follow the use of the bicycle, especially among women. Difficult parturition was foretold, from hardening and contraction of the undeveloped pelvis of the girl; and all manner of inflammations, displacements, and injuries ought to have been epidemic by now if there is any force in logic. But on the contrary, both from women themselves and from their physicians, comes most positive testimony of the good effects of the outdoor freedom, sensible dress, and muscular development achieved by the judicious use of the wheel.

In America we are prone to enthusiasms, but our praises of the bicycle are echoed by the most staid of our European contemporaries. Thus in the *Deutsch. Med. Woch.* of November 26, 1896, Dr. Otto Floel has a paper on the subject of bicycling for women, in which he states his belief that wheeling exercises a curative influence on affections which result from a relaxed condition of the pelvic organs, on prolapse, and not infrequently on chronic inflammations. Although he advises rest during the menstrual period, he admits that many ride at this time without apparent ill effects. Dr. Floel considers it to have a decidedly favorable effect upon constipation. His personal observations have been made from a study of twenty-four cases. Twenty-two of these cases were between the ages of twenty and forty. Eleven were in good health when they began to ride. In twelve cases where general nervous symptoms had been present, anorexia, headache, insomnia, the improvement was marked; in eight cases a complete cure resulted.

There were no serious gynecological trouble in any of the cases, but minor troubles, "discharges," difficult and irregular menstruation, amenorrhea, and dysmenorrhea were greatly benefitted. The thin gained in weight and the fleshy lost. Two women were cured of hemorrhoids. One rode during the early months of pregnancy without accident or ill result.

The author counsels care at first to avoid overfatigue from the unaccustomed exercise. The body should be held erect, resting on the nates. The saddle should be horizontal and stretched taut, as a lax saddle might cause sexual irritation, although the writer had not observed it.

Loose clothing should be worn and supported from the shoulders, and a corset should only be worn when the breasts demand support. In this case a loose corset may be worn reaching only to the waist.

TO STAND ERECT.

A gymnasium director of long experience disapproves shoulder braces. They weaken, so he thinks, the muscles, whose function it is to keep the shoulders in their normal position. This they do in two ways—by relieving the muscles of their work, and by putting a constraint upon them, and so depriving them of a normal supply of blood.

Instead of artificial shoulder braces, the director recommends the frequent and persistent use of exercises specially adapted to promote an erect carriage.

It is not enough, he says, to work an hour or so daily in a gymnasium. The proper exercises should be taken many times a day, and therefore should be of a sort that can be practiced anywhere and without special apparatus. Some of the habits and exercises on which he lays stress are as follows:

1. Make it a rule to keep the back of the neck close to the back of the collar.

2. Roll the shoulders backward and downward.

3. Try to squeeze the shoulder blades together many times a day.

4. Stand erect at short intervals during the day—" head up, chin in, chest out, shoulders back."

5. Walk or stand with the hands clasped behind the head and the elbows wide apart.

6. Walk about, or even run upstairs, with from ten to forty pounds on the top of the head.

7. Try to look at the top of your high-cut vest or your necktie.

8. Practice the arm movements of breast-stroke swimming while standing or walking.

9. Hold the arms behind the back.

10. Carry a cane or umbrella behind the small part of the back or behind the neck.

11. Put the hands on the hips, with elbows back and fingers forward.

12. Walk with the thumbs in the arm-holes of the vest.

13. When walking, swing the arms and shoulders strongly backward.

14. Stand now and then during the day with all the posterior parts of the body, so far as possible, touching a vertical wall.

15. Look upward as you walk on the sunny side of the street.

The foregoing exercises, it will be seen, are happily varied, and are, many of them, such as can be practiced by anybody in almost any occupation. If he cannot use one, he can another.

The director goes on to say that even in a gymnasium a man must be on his guard against forms of exercise that tend to induce a stooping posture. " As round-shouldered as a gymnast," he says, has almost passed into a proverb.

He recommends also what he calls a " lie-abed exercise." " Stand on the back of the head, the back shoulders and the heels by arching the back," and repeat the operation a dozen times or so.—*The Public Health Journal.*

BREATHING THROUGH THE MOUTH.

About two-thirds of the bicyclists one sees, about one-half the pedestrians, and nine-tenths of the children, have their mouths open. It is time to put in force a little Indian discipline on the young folks or we shall all be mouth-breathers, and consumption, catarrh and eye and ear diseases will be even more prevalent than now.

NOTES AND COMMENTS.

TREATMENT OF OBESITY.

The following is from *Health* :

"The treatment of obesity has hitherto chiefly consisted in the adoption of one of the various dietetic systems, as that of Banting or Ebstein, in connection with the use of drugs, which owe their fat-reducing influence mainly to their purgative properties. While some persons obtain benefit from strict adherence to one of these so-called reduction cures, there are many who are unwilling to put up with the attending discomfort, or to whom the treatment becomes so irksome that the patient cannot be made to persevere for a sufficient time to experience its effects. Others, again, are so weakened by a radical change in the diet that it cannot be long maintained. Hence, when some time ago attention was drawn to the fact that many cases of obesity could be improved by thyroid feeding, it was thought that a decided acquisition had been made to the therapeutics of this affection. It was found, however, that owing to their uncertain strength it was difficult to regulate the dose of thyroid preparations, and that partly in consequence of this and partly because of the presence of albuminoid decomposition products unpleasant and even injurious sequelæ were not infrequently noted. When, therefore, Baumann discovered the active principle of the thyroid, a trituration of which with sugar of milk has been introduced under the name of iodothyrine, he enabled the physician to avail himself of all the benefits of the thyroid treatment in obesity without the drawback of other thyroid products. Experiments made with iodothyrine by Dr. Grawitz in the medical clinic of Professor Gerhardt, of Berlin, by Dr. Hennig and others, have demonstrated that even in cases where no change was made in the diet there was a rapid and marked reduction in weight. This was unaccompanied by unpleasant or toxic effects of any kind, so that the new remedy may be considered as a safe and reliable anti-fat and an important acquisition to the treatment of obesity."

PRIMARY STERILITY AND GONORRHŒA.

Vedeler (*British Medical Journal*) investigated 310 sterile women, and found that undoubtedly gonorrhœa is the most frequent cause of sterility. The average years of marriage in the series were 3, the minimum, 1 complete, whilst 72 of the women had been married over 10 years. Vedeler succeeded in examining 50 of the husbands, and found that 38 had had gonorrhœa and 34 had infected their wives. He calculated that at this rate 235 of the 310 husbands probably had had that disease, and that about 210 must have infected their wives. Lest this calculation should seem fanciful, Vedeler investigated 198 of the women where the health of the husband could not be satisfactorily determined, and found that they had suffered from local inflammatory changes, just as in the case of the 34 whose husbands had undoubtedly infected them.—*Maryland Medical Journal.*

Listerine THE STANDARD ANTISEPTIC

LISTERINE is to make and maintain surgical cleanliness in the antiseptic and prophylactic treatment and care of all parts of the human body.

LISTERINE is of accurately determined and uniform antiseptic powder, and of positive originality.

LISTERINE is kept in stock by all worthy pharmacists everywhere.

LISTERINE is taken as a standard of antiseptic preparations: The imitators all say "It is something like LISTERINE."

LAMBERTS'
LITHIATED
HYDRANGEA.

A valuable Renal Alterative and Antilithic agent of marked service in the treatment of Cystisis, Gout, Rheumatism, and diseases of the Uric Diathesis generally. . . .

DESCRIPTIVE LITERATURE UPON APPLICATION.

LAMBERT PHARMACAL COMPANY ST. LOUIS

JENNER AND THE SMALL-POX.

Gloucester, England, was the scene of the life and work of Jenner, and it seems strange to report that this same town has suffered an epidemic of small-pox, the like of which has not been experienced by any other town in England for years (Medical Record). A detailed account of this epidemic, published in the Times, furnished the following statement of facts: Between 1886 and 1894 the number of public vaccinations had fallen from 1,095 to 34, and in ten years the total was only 2,378, though in that period 15,682 children had been born in Gloucester, and only 3176 had died. The epidemic began with a case of small-pox in an unvaccinated child which was concealed and treated as measles. The end of the epidemic was certainly not due to effective isolation nor to the exhaustion of the virulence of the infection. When the city began to be boycotted, the citizens appealed to the City Council; the Council appealed to the doctors, and the doctors replied that isolation, vaccination and revaccination were the necessity of the time. Finally, the Board of Guardians instructed the vaccination officers to carry out the law. More than 36,000 vaccinations were effected. The epidemic was brought under control in May, and by the end of July it had been stamped out. The epidemic had attacked 2,036 persons (the population being about 40,000), of whom 443 died, a mortality of nearly twenty-two per cent. The guardians are now prosecuting vaccination defaulters with energy as great as their previous indifference.—Medical Standard, March, 1897.

HEALTHFULNESS OF NEW YORK.

The healthfulness of New York has been greatly enhanced by the clean condition of the streets. It is expensive but it pays. In a recent communication on the subject Col. Waring says: "We have considerably less than 400 miles of paved streets on this island, and it costs us pretty nearly $3,000,000 a year to keep them in order. We sweep sixteen miles from three to five times per day; over 200 miles twice a day, and the remainder once a day."—Medical News.

THE ANNALS OF
Hygiene and of Medicine

Vol. 12 PHILADELPHIA No. 10

COMMUNICATIONS.

HOW SHALL WE DISPOSE OF OUR DEAD?

By WILLIAM C. POWELL, M.D., Bryn Mawr, Pa.

(Read before the Homœopathic Medical Society of the Twenty-third Ward of Philadelphia, November Meeting, 1896.)

IN presenting this paper I was actuated by a desire to get the views of this Society on the question, How shall we dispose of our dead? It is one which has agitated the mind of man from the creation to the present. There are few subjects which present such varied and important thoughts for consideration. Human life presents to Christian people two elements or natures—a human, material or mortal, and a divine, spiritual or immortal. Death, the termination forever of earthly activity, separates these two natures—the spiritual returning to God and divine means for its disposal, the human remaining a foreign substance for the living to dispose of according to their peculiar customs. In considering this question I shall confine myself to the two modes in vogue at present, inhumation and cremation. For convenience, I desire to call your attention to the subject under five heads: sanitary, economical, medico-legal, æsthetic and theological. The medical profession particularly should take an active, intelligent and practical interest in the first, or sanitary, solution. That poisonous substances can be transmitted through the ground for a considerable distance is shown by an experiment of Sir Spencer Wells: "A salt of lithium was spread upon the ground at a distance of five hundred feet from a well, the water of which was free from that metal. Repeated examinations were made, and at the end of eighteen days lithium was detected in the water, showing the salt must have penetrated the soil and found its way into the well." The advocates of cremation claim that efforts to arrest infectious, as well as contagious diseases, such as scarlet fever, diphtheria, etc., are frustrated by the burial of infected bodies; for, while the microbes themselves die, their spores or seeds have great vitality, and burial does not destroy the contagion that lurks within them, and there is constant risk of contamination of both air and water. They say we shun the presence of those afflicted with infectious diseases while living, and yet no sooner are they removed by death than we are content to lay them in the ground, that they may slowly dissipate their terribly infectious gases through the soil, and, saturating that, may thereby recharge the rains of heaven, as they filter through it, and thus reproduce all their virulence in the systems of the living. In proof of this, Dr. Frierie, of Rio Janeiro, while investigating an epidemic of yellow fever a few years ago, found the soil of the cemetery wherein the victims of the fever were buried, alive with germs exactly similar to those found in the blood of the recent victims. Such an eminent authority as Sir Henry Thompson says: "Give me the dead body to resolve into carbonic acid, water and ammonia as rapidly as possible, and I have no fear of disease spreading in neighborhoods where it is prevailing." Cemeteries, they assert, are a menace to public health, and often are so situated that the leechings from the accumulated corpses must of necessity be filtered into the wells from which many families obtain their drinking-water. The result is not only disagreeable to contemplate, but is detrimental to health, producing fever and germ-diseases. If this be true, by earth-burial we are unavailing in our attempts to arrest disease. But let us see what the advocates of earth-burial claim. Such scientists as Pettenkofer, Hofman and Leluri, state that, from a bacteriological standpoint, there is no evidence that a buried body is a source of special danger to the living, and the fear that any water-supply would be contaminated because of drainage from dead bodies is unreasonable—that no damage can come of exhalation from a body six feet below the earth. Personally, as far as my limited experience goes, I have been unable to trace sickness due to close proximity to cemeteries, and have not found families living near them more sickly than those at a distance. Furthermore, I feel the dangers are much exaggerated ; and I believe, if the process of embalming by injecting the embalming fluid into the circulation soon after death, was practiced, it would so disinfect the body as to render it harmless. A local undertaker, Mr. J. S. Pearce, one of the foremost in his profession, has conducted a very interesting and instructive experiment upon an unclaimed male body. Last March the body was embalmed. Eight months have passed and it is still in a perfect state of preservation, although resting on a swinging-shelf in the third-story of a wareroom, with nothing but a muslin cover over it, subject to the excessive heat of summer, and yet no odor nor evidence of decomposition. On the contrary, a mummification has taken place in the nose, fingers and toes. This preservation explodes a statute law which claims that in three months a body, if buried or exposed to atmospheric conditions, would be so distended with gases of decomposition as to be unrecognizable. The only odor to this body is that of human oil ; the cover surrounding the body has become greasy from contact with it. For dissecting purposes this experiment should be of great advantage, not only disinfecting the body, but preserving it indefinitely. This subject, five months after death, had a portion of thigh dissected by one of our local physicians, and even now the flap can be removed and the muscles will be found pliable, arteries and veins in good order. The abdominal cavity was opened, and the internal organs found in a perfect state of preservation. The disgusting practice of pickling the bodies for dissection should be done away with. As a proof that water is not contaminated by burial, in West Laurel Hill, within a few feet of hundreds of dead bodies, is a well, which furnishes as pure drinking-water as can be found in any section of the country. This has been chemically tested by experts, and not a trace of impurity found.

Now as to the economic aspect. The expense of interment varies greatly in different localities, and is much or little, according to the financial standing of the deceased. The average expense in the middle classes for each interment is from $25 to

$100, including in this estimate coffin, undertaker's fee, and lot. The cost of incineration at Philadelphia crematories for members is $75; non-members, $90. This includes a handsome coffin, hearse, two carriages, services of undertaker, incineration of body, a receptacle for the ashes, and space in cemetery for urn-burial. The medico-legal question presents a great disadvantage to incineration. In cases of doubtful identity, it is sometimes possible to settle the disputed point by inspection of the body after burial. Again, in cases where poisoning or criminal violence is suspected, the result of the trial and fate of the accused may sometimes depend upon the evidence furnished by a post-mortem or perhaps post-burial examination of the body. The destruction by cremation of all demonstrable evidence of the cause of death—that is, as can only be obtained by the exhumation of the body—is a danger to society, and should be made the subject of careful investigation. The law at present seems inadequate to settle the difficulty. The only requirements of the incinerating company are, that a permit must come from the Board of Health, and all applications for the incineration of bodies must be accompanied by the customary certificate of death.

The æsthetic side offers, probably, the most potent objection to cremation in the minds of many. There is something peculiarly shocking to most minds in the thought of burning the bodies of friends. That a human form, but recently full of life and vigor, should be burned to ashes seems little less than sacrilege, and when the form is that of one whom they have loved and cherished in life, cared for in sickness, and watched over in the hour of death, the idea becomes repulsive. On the other hand, to minds differently constituted, this method, whereby the remains of loved ones are reduced to their elements in a few hours, seems infinitely preferable. They have a horror of placing their loved ones in the ground to moulder and decay, to be eaten by worms, and perchance to have the grave desecrated. Then, too, the horror some have of being buried alive would be obviated. So, too, if embalming, in connection with earth-burial, be practiced, there can be no possible return of life in the grave. As some may not have familiarized themselves with the process of incineration, I have condensed the following from the *Columbarium*, a journal devoted to the interests of cremation: "Upon arriving at the crematorium, the coffin, with the body, is placed upon a catafalque and taken to the chapel, where services can be held. After this it descends, by means of an elevator, to the crematory, is placed upon a cradle, covered with a cloth saturated in alum-water, and noiselessly rolled into the retort or incineration-chamber. This is built of fire-clay and heated to about 2600° Fahrenheit. No fire comes in contact with the body, and no flame touches the flesh or bones at any stage of the process. In about three hours the coffin is reduced to charcoal and the body to pearly-white ashes. The charcoal is removed and the ashes placed in a temporary receptacle until final disposition is determined by the relatives of the deceased."

As to the last, or theological, standpoint: Between burning and burial there is no difference as to the final result; the inevitable change is wrought in the one case quickly, in the other slowly; in one by the action of clean flame, in the other by the action of the earth. When the soul leaves the body it leaves it forever. The resurrection body is not the physical, natural body, but the spiritual body. St. Paul tells us the relation of this present body to that which shall be hereafter is like the relation of the seed to the flower or the grain to the stalk and fruit. The notion that our future state depends in any way upon the disposition of our dead body has no place in the Christian religion. Take, for instance, a hero rushing into a burning house to save the life of another. The ashes of his body mingle with the ashes of the ruins. Does anyone suppose his soul burned with his body? One must have a strange idea of God to believe that. If such be true, what shall be said of the holy men and women who have died at martyrs' stakes? Both sides of this subject I have tried to place before you in a fair and candid spirit, and trust it may bring forth a good discussion. There are a few customs, however, which I should like to criticize—the ostentatious and elaborate obsequies, the showy mourning, the glowing and often grossly excessive tributes to the deceased, the artificial pomp and parade of sepulchral display which fashion or custom continues to dictate; but as my paper is already long, I shall not dilate further, but will only state that there is an encouraging sign and evidence of growing intelligence, to read in our newspapers, "No flowers" and "Interment private." In the presence of such solemnity as death the utmost simplicity is most becoming.—*The Hahnemann Monthly.*

TRANSFORMATION OF HEREDITY.

By JAS. G. KIERNAN, M.D., Chicago.

Foreign Associate Member of the French Medico-Psychological Association; Fellow of the Chicago Academy of Medicine; Lecturer on Forensic Psychiatry, Kent College of Law; Member of the American Medical Association.

In dealing with heredity, physicians, as well as other biologists, are apt to ignore general principles, which, thoroughly established, are yet more honored in the breach (so far as their practical employment is concerned) than in the observance. Transformation of heredity has long been accepted in medicine, as well as in other departments of biology. Some of the older clinicians recognized fully the central principle that it was not so much a specific disorder that was transmitted, as a constitutional deficiency which took the line of least resistance. The great American clinician, Benjamin Rush,* pointed out that hereditary sameness of organization of the nerves, brain, and blood-vessels on which the predisposition to insanity depends sometimes pervades whole families and renders them liable to this disease from a transient or feeble operation of its causes. According to Moreau† (de Tours) "an incorrect conception of the law of heredity looks for identical phenomena in each succeeding generation. Some have refused to admit that mental faculties were subject to heredity because the mental characters of the descendants were not precisely those of the progenitors. Each generation must copy the preceding. Father and son must present the spectacle of one being, having two births, and each time leading the same life, under the same conditions. But it is not in the heredity of functions or of organic or intellectual facts that the application of the law of heredity must be sought, but at the very fountain-head of the organism, in its inmost constitution. A family whose head is insane or epileptic does not of necessity consist of lunatics or epileptics, but the children may be idiotic, paralytic, or scrofulous. What the father transmits to the children is not insanity, but a vicious constitution, which will manifest itself under various forms in epilepsy, hysteria, scrofula, rickets, etc. This is what is to be understood by hereditary transmission."

---

* Diseases of the Mind, 1875.

† La Psychologie Morbide.

By heredity Morel* (to whom Moreau (de Tours) bore the relation of Darwin to Wallace) "does not mean the very disorder of the parents transmitted to the children with the identical mental and physical symptoms observed in the progenitors. By heredity is meant transmission of organic disposition from parents to children. Alienists have perhaps more frequent occasions than others for observing, not merely this hereditary transmission, but likewise various transformations which occur in the descendants. They are aware that simple neuropathy of the parents may produce in the children an organic disposition resulting in mania or melancholia, nervous affections which in turn may produce more serious degeneracy and terminate in the idiocy or imbecility of those who form the last link in the chain of hereditary transmission."

According to Maudsley it is not "the insane variation that is inherited, but a native fault or flaw in the germ plasm of the stock."

According to Mercier† "it is far too insufficiently recognized that the factor which is directly inherited is not insanity, but an instability or disordered arrangement of nerve tissue that allows insanity to occur; and that we must look for the heritable antecedents of insanity not only in the insanity itself as existing in progenitors, but in all maladies which display evidence of undue instability or disorder of the highest nervous arrangement."

According to Krafft-Ebing‡ "all the weakness of the nervous system and the propogative powers tends to neuropathy, and thereby to all possible neuroses in the offspring."

The subject, despite its long recognition by the earlier clinicians and alienists, has received too little attention from alienists, from general practitioners, and from certain specialists (who thereby exhibit mental limitations in confining human disorders to an origin in the particular part of the body to which they pay attention). For these last commercial exigencies may prove, not an excuse, but an explanation. For general practitioners, alienists, and neurologists who deal with the body as a whole no explanation of this kind can be accepted. Yet all these classes mar their scientific contributions by limiting heredity to a particular disorder. Many details of great biologic value are thus lost.

---

*Dégénéréscence de L'Spéce Humaine.

†Dictionary of Psychological Medicine.

‡Lehrbuch der Psychiatrie.

It is possible to make heredity statistics more accurate by laying more stress in the inquiry, not on insanity, but on other factors. The last will be admitted as hereditary when the first is denied. Moreau indicated the lines along which such indications should be pursued when he divided the conditions due to degeneracy in a family into the following categories: First, absence of conception; second, retardation of conception; third, imperfect conception; fourth, incomplete products (monstrosties); fifth, products whose mental, moral, and physical constitution is imperfect; sixth, products specially exposed to nervous disorders in order of frequency as follows: Epilepsy, imbecility or idiocy, deaf-mutism, insanity, cerebral paralysis, and other cerebral disorders; seventh, lymphatic products predisposed to tuberculosis and allied disorders; eighth, products which die in infancy in a greater proportion than sound infants under the same condition; ninth, products which, although they escape stress of infancy, are less adapted than others to resist disease and death.

The transformations thus pointed out by Moreau have been experimentally demonstrated by Charrin and Gley,* who for five years conducted experiments calculated to throw light on the influence on the offspring of parental reception of virus. Either the male and female have been inoculated with the bacillus of blue pus or of its toxins, or but one animal has been inoculated. The results have not been uniform. Most frequently there ensues sterility, abortion, or birth of progeny that die immediately. In rare instances the offspring survive; more rarely still are they healthy. Certain rabbits (born of these undeveloped animals) were provided with enormous epiphyses, the diaphyses being shortened. Two rabbits were born of a couple of which the male alone received inoculations of sterilized culture. Five rabbits were born of these two, of which two were normal and a third (whose ears were rudimentary) died in a few days. In the remaining two the ears comprised only fragments with jagged upper edges. The tails were but two centimeters long. The external orifice of the vagina (one rabbit was a male and the other a female) was oblique. One of the limbs (the hind in the male and the fore in the female) was much shorter than its fellow, the difference being four centimeters. The shortened limb ended in a kind of stump, there being no foot or toes. It is interesting to notice the analogy between the degenerative effects of these cultures and the syphilitic virus, even when only the male progenitor is under its influence. The experiments go to prove that there is no special transmitted influence inherent in the toxin of syphilis, since other toxins have identical effects on the offspring. The experiments further demonstrate the influence on the progeny of the modified cell whose attributes are thus transmitted to the next generation.

---

*Lancet, 1895.

To illnstrate how much may be gained by careful examination in this particular, I shall cite some researches of my own, pursued in regard to one family during more than two decades. The family originated in the Eastern States, but has branches south and westward. A farmer lived twenty miles distant from his nearest neighbor, whose only child he married. The daughter had led a lonely life till her courtship at the age of twenty-eight by the farmer, then three years younger. The farmer married her for $200, after having impregnated her. He then found lead on his farm, and went to a city. A stock company bought his farm and launched him into the stock market, where he made money, more as cunning tool than adventurer. He became a high-liver, gouty and dyspeptic, and died from gouty kidney at seventy. The couple had five children. The eldest, a son, became a "Napoleon of Finance," inherited his father's cunning, and died wealthy within the pale of the law. He married a society woman, the last scion of an old family. The second child, a daughter, was club-footed and early suffered from gouty tophi. She married a society man of old family who had cleft palate. The third child, a daughter, had congenital strabismus. She married a man who was suffering from irregular migraine. The fourth child, a daughter, was normal. She married a thirty-year-old active business man in whom ataxia developed a year after marriage. The fifth child, a son, was ataxic at eighteen. The scions of the "Napoleon of Finance" and the society woman were an imbecile son, a hysteriac, a female epileptic who had a double uterus, a nymphomaniac, and a society man who wrote verses. The cleft-palated society man and club-footed woman had triplets born dead, and a strasbismic migrainous son, who, left penniless by his father, married his cousin, the nymphomaniac daughter of the "Napoleon of Finance," after being detected in an intrigue with her. The migrainous man and strabismic daughter of the farmer-stock-broker had a sexual invert masculine daughter, a daughter subject to periodical epistaxis irrespective of menstruation, as well as chorea during childhood, a normal daughter, a deaf-mute phthisical son, a cloacal daughter, an ameliac son, a cyclopic daughter born dead, and a normal son. The sexual invert married the versifier son of the "Napoleon of Finance." The progeny of the normal daughter of the farmer-stock-broker and the ataxic man were a dead-born sarcomatous son, a gouty son with early tophi, twin boys paralyzed in infancy, twin girls (normal), a normal son, and a son ataxic at fourteen. The progeny of the nymphomaniac and her strabismic migrainous cousin were a ne'er-do-well, a periodical lunatic, a dipsomaniac daughter (who died of gastric cancer), deformed triplets who died at birth, an epileptic imbecile son, a hermaphrodite, a prostitute, a double monster born dead, a normal daughter, and a paranoic son. The ne'er-do-well married his epistaxic cousin. The gouty son of the farmer's normal daughter married the hysteric daughter of the "Napoleon of Finance." They had a son born with unilateral asymmetry, a prostitute, dead triplets, a male sexual invert, a color-blind daughter, and a normal son. The color-blind daughter married a paranoic grandson of the "Napoleon of Finance." The progeny of the sexual invert and the versifier (who were soon divorced) were a periodical nymphomaniac who had some artistic and literary talent, and a son who died of gastric cancer. The scions of the ne'er-do-well and the epistaxic woman were a moral imbecile, a "bleeder," a stammering daughter who had uvula deformity, a deaf-mute cryptorchid, dead-born triplets, an infantile paralytic son, and dead-born quadruplets. The progeny of the paranoac and his color-blind cousin were an exopthalmic daughter, an epileptic cryptorchid, a cleft-palated imbecile with a cloaca, dead-born quadruplets, an idiot boy, and a "bleeder."

A family history illustrating the same fact came under my observation at the Chicago (Cook County) Insane Hospital. That the patient's grandfather and father had been prophets of the Lord was shown by the fact that on one side of the body they had six toes and six fingers, and the two sides of the body were unequal, the six-fingered one being smaller than the other. This father and grandfather were highly regarded in a secluded vale of Norway as religious teachers and for their power to cure disease by charm. The father had ten children, of whom three were born dead and six died in infancy. My patient was the only survivor of this family. He during boyhood experienced various persecutions, some by unseen agencies, some on the part of the villagers, who toward the end of his father's life also persecuted the father. These persecutions seem to have been withdrawal by the peasants of their belief in the father's ability to charm sickness out of cattle, evidently due to growing popular intelligence. This was regarded by the father as the result of persecution by the devil, who was desirous of trying him as Job was tried. It was revealed to him that his son should likewise suffer persecution, which would also be the work of the devil. The son heard unseen persons who pointed him out in school as the son of the sham wizard. In consequence, he was avoided by all his schoolmates except the members of one family who still retained their belief in the father's supernatural powers. Into this family the son married; then, pressed by his unseen persecutors, he came to the United States. Here he worked at his trade (carpenter), and had no return of any persecutory delusions, although he still believed he was a prophet. On admission to the insane hospital twenty years after his arrival in the United States he was found to have such a decidedly asymmetrical body that suspicions of general hemiatrophy were excited, but the condition was found to be congenital. The hand and foot of the seemingly atrophic side had six fingers and toes. The man had been sent to the insane hospital in consequence of an altercation with a neighbor who was clearly in the wrong; but both being arrested, the patient's *amour propre* was aroused and he declared his prophetship, which led to his trial and commitment as a lunatic. His wife, who applied for his discharge, was also a paranoiac. They had had ten children, of whom three were still living at the ages of six, eight, and ten. Two of these were six-toed and six-fingered unilaterally, and one of them, a boy, had the peculiar general asymmetry of the father. The third child was seemingly normal.

The limitation of the malformation to the side affected by arrest of growth here seen has been observed in other cases. This unilateral predisposition, which occurs usually from heredity or intrauterine causes, may be artificially produced. Kasparek cut the sciatic nerve of one side in rabbits, thus producing the trophoneurotic state to which Brown-Sequard called attention decades ago. Kasparek* (after all inflammatory symptoms had subsided) injected the opposite ear with the cultures of streptococci and staphylococci, and killed the animal after some days. The sound side was found free from suppuration, but immense abscesses existed on the trophoneurotic side. Such local predisposition was pointed out by Merrill over four decades previously.† This condition, as Fere has shown, occurs in many systemic and infectious diseases which present a localization in relation to heredity or determined by an anterior morbid state of the nervous system. Sometimes these manifestations are limited to the side free from nervous trouble. Very often they attack the side which is the predominant seat of nervous symptoms. Fere points out that in chromatic asymmetry of the iris the iris is most deeply colored on the side most affected by nervous symptoms or arrest of development. He reports a localization of nervous troubles on the side most offected by harelip. Heuse has observed the coexistence on the same side of congenital cataract and of rachitic deformities of the skull and thorax.

General predisposition to systemic diseases of infectious type is often found associated with a hereditary state. It is not rare to find among these subjects the morphologic stigmata which characterize degeneracy. Alex. James,‡ Ricochon,|| and others have shown that in addition to the ordinary stigmata, the biologic stigmata of degeneracy (such as plural and quickly repeated births) are frequent among phthisical families. The same phenomena often occur in families whose scions are attacked with diabetes, obesity, chronic rheumatism, and gout. De Giovanni§ claims that particular nervous states exist in those predisposed to tuberculosis, whom he divides into erethists, torpids, and ener-

---

*American Medico-Surgical Bulletin, 1896.

†American Journal of the Medical Sciences, 1856.

‡La Famille Neuropathique.

||Bulletin Medical, 1887.

§St. Louis Clinical Record, 1878-81.

getics. He points out that there exists a diminutive heart whose right ventricle has comparatively exaggerated dimensions, while the arteries have lessened caliber. The explanation of these phenomena, which seem bizarre to men biased by the conception that disorders breed true to themselves and that fecundity is a test of advance, is found in the principles forming the very essence of embryology. Von Baer showed that vertebrate embryos, all of a common type at their origin, assume successively a number of common forms before definitely differentiating. Dareste points out that supernumerary organs do exist in these common forms at one phase of embronyic life. This community of embryonic types and this last fact explains repetition of teratologic types in vertebrates. This community of origin, moreover, indicates that a higher vertebrate embryo contains in essence the organs and potentialities of all lower vertebrates, and that under the influence of heredity or accidental defect, an organ belonging to another species may develop, or an organ constant in a species may be lacking in an individual, without the necessity of explaining the immediate effects by distant atavism. Some anomalies found among degenerates recall types less elevated than man and very distant from him and even his Lemurian precursor. The cyclopian monstrosity reverts to the eye type of the ascidian precursors of the vertebrates.

As Dareste has shown (a fact corroborated by Spitzka), embryologists can imitate natural teratologic malformation of the nerve centers by artificial methods. By wounding the embryonic and vascular areas of the chick's germ with a cataract needle, malformations are induced varying in intensity and character with the earliness of the injury and its precise extent. More delicate injuries produce less monstrous development. Partial vanishing or irregular heating of the egg-shell in particular results in anomalies comparable to microcephaly and cerebral asymmetry. This latter fact (showing the constancy of the injurious effect of so apparently slight an impression as the partial varnishing of a structure not connected with the embryo at all directly) suggests the line of research to be followed in determining the source of the maternal and other impressions acting on the germ. What delicate problems are to be solved in this connection may be inferred from the fact that eggs transported in railroad cars, and subjected to the vibration and repeated shocks of a railroad journey, are checked in development for several days. A more delicate molecular transmission during the maturation of the ovum, during its fertilization, or finally during embryonic stages of the more complex and therefore more readily disturbed and distorted human germ, accounts for the disastrous effect of insanity, emotion, or other mental or physical shock of the parent on the offspring. The cause of the majority of cerebral deformities exists in the germ prior to the appearance of the separate organs of the body. Artificial deformities produce analogous results because they imitate original germ defects, either by mechanical removal or by some other interference with a special part of the germ. Early involvement of the germ is shown by the fact that somatic malformations in the hereditary psychoses often involve the body elsewhere than in the nervous axis. The stigmata of heredity—defective development of the uro-genital system, deformities in the face, skull, irregular growth of the teeth, misshapen ears and limbs—owe their grave significance to this fact. Like deformities of the brain, these anomalies are also more marked and constant with the lower forms of the hereditarily based systematized perversions of the mind than the higher. It is easy from these results to understand how far and how the nervous system has its part in the disorders of general development. It can easily be understood how the individuals who present most deformities are equally those who suffer from most decided disorders of the nervous system.

As already indicated, these disorders may be transformed into each other and co-exist as well. Moor* has observed a polydactylous imbecile girl. Her grandfather and two uncles were also polydactylous, the grandfather and one uncle being insane. These defects are not always a simple expression of anomaly, but create local predisposition to disease. Hernia, for example, is a defect often due to imperfect evolution. Le Double has shown that in cases of inguinal hernia epididymitis coming on in the course of blennorrhagia almost invariably occurs on the side of the hernia. In certain genital anomalies (macrorchidia, microrchidia, ectopias, and testicle inversions) blennorrhagic inflammation almost always occurs at the seat of the anomaly.

From these general principles it is easy to understand the law of transformation of heredity. The material on this point existing prior to the time of Moreau (de Tours) had been excellently utitilized by him. Doutrebent* (ten years later than the appearance of the work of Moreau) reported the following family history: First generation: father intelligent, became melancholic, and died insane; mother nervous and emotional. Second generation: ten children; three died in childhood; seven reached maturity as follows: daughter A. melancholiac; daughter B. insane at twenty; daughter C. imbecile; daughter D. a suicide; son E. imbecile; son F. melancholiac; son G. melancholiac. Third generation: ten children; five died in childhood, one is deformed and has fits of insanity, one is eccentric and extravagant, two are intelligent and married, but are childless. B. leaves no issue. C. has one child, a deformed imbecile. D. has three children; one is an imbecile, one died of appoplexy at twenty-three, and the third is an artist described as "extravagant." E. has two children; one died insane, the other disappeared and is supposed to have committed suicide. F. is childless. G. has one child who is an imbecile.

---

* Medical Times and Gazette, London, 1875, p. 573.

A case of transformation much less extended than this has been reported by I. H. Neff† of the Pontiac (Mich.) Insane Hospital. The case was that of a paranoiac who had a deaf-mute mother, and two maternal granduncles insane; one brother and a sister insane; one brother peculiar; two brothers deaf; one child of each brother deaf; one maternal aunt and one maternal cousin similarly affected. In another case reported the paternal grandparents were cousins. The father was always regarded as nervous. One brother of the patient has headaches, is considered feeble-minded, and has chorea. Another brother and two sisters have eye-disorders and wear glasses. Two children of the maternal uncle are imbecile and have extreme difficulty with eyesight. Two other cousins are weak-minded and have eye-disorders. Neff reports an extended family history covering five generations. The first ancestor noted, died in 1796 of "dropsy." His wife died in 1794 of phthisis. They had thirteen children, the history of but three of whom is known. One died at the age of forty-one of a "frenzy." Another married a woman whose brother married his sister. They had children. His sister and his brother-in-law had twelve children. The son of the one married the daughter of the other. Both died of phthisis. Both were separated from each other and from their children for many years before death. The histories of eight of their children are known. One of these was a phthisical idiot; girl was insane; boy was killed in battle; another boy was insane; three girls were phthisical; one boy was a deaf-mute. The brother of the mother of these last children committed suicide. He had four children, of one of whom nothing is known. Another became insane and left no progeny. A second, a neuropath, left one child who became insane. A third was deformed and left one child, who also became insane.

---

* Annales Medico-Psychologiques, 1860.

† American Journal of Insanity, 1895-6.

In my genealological table appeared some cases of cancer. The trend of pathologic thought, after swaying between the doctrine of the microbic origin of neoplasms and the doctrine of of heredity, is finally settling down to a modification of the doctrine of Cohnheim, that these are due to a local arrest of development, and hence of hereditary or at least congenital origin. Strahan* has illustrated excellently transformation taking the direction of cancer in the case of the father of a family who died of gastric cancer at sixty-six, and who had a brother who cut his throat at fifty-six. The mother died of a "fit" at fifty-four. This pair had seven children. One son died of gastric cancer at fifty-eight; one son died in infancy of convulsions; three daughters died of phthisis; one son was epileptic, and one apparently normal son. B. W. Richardson had under care a young man who married a woman whose parents had died of phthisis, and whose ancestry contained numerous victims of cancer. This couple had five children who died after adolescence. The first died during infancy of lupus: the second died of phthisis; the third and fourth of cerebral tuberculosis; the fifth, who lived longest, died at thirty-six of cancer.

Strahan gives three generations of another family. In the first generation was one suicide, one victim of gastric cancer, and one victim of epilepsy. In the second generation was one victim of gastric cancer who left five children. One died of infantile convulsions; one phthisical man married but had no children;

---

*Marriage and Disease.

another phthisical man had no children; the third, a victim of phthisis, died before being married; the sixth member of the same generation was apparently normal and had seven children; another died of cancer; the eighth member of the same generation was a cryptorchid epileptic who was twice insane, and married but left no issue.

While there is nothing strikingly unique in these cases, they indicate how much of interest is lost by failing to register facts not in immediate relation to direct heredity. Undoubtedly commercialism often interferes with such registry. Frequently abuse of the reflex hypothesis for commercial reasons leads to deliberate ignoring of such facts. Most records, however, fail to be made because of the honorable desire on the part of physicians to preserve patients' confidence and to prevent reflections upon them. Were patients' names, initials, and photographs—other than of the special deformity—suppressed (as they should be) in case-records this difficulty would not arise. The desire to lend needless *vraisemblance* to case-reports leads of necessity to suppression of important facts in regard to heredity, especially if that heredity bear upon mental or moral abnormality. In the hope of stimulating case-records of the kind indicated in the genealogy given the present article has been written. The existence of such records in the histories of aristocracies has been utilized by Jacoby,* and also that of the family whose varying lights and shades of heredity Zola utilized in his Rougon-Macquart series. His realism has blinded sociologists to the optimistic lessons he has taught as to degeneracy and environment. The ancestress of this family is the product of aristocratic degeneracy, the heiress of a dying line. A most pathetic picture is that in which the "bleeder" imbecile great-grandchild expires from hemorrhage at the feet of his insane centenarian ancestress, who is unable to help him because of the mental stupor resulting from shock due to the sight of hemorrhage, which recalls to the old woman the terrible scene of the shooting of a grandchild by the emissaries of Napoleon the Little, who were killing the second French Republic and its defenders at one and the same time. The student of heredity who can stand outspoken candid realism will find some excellent studies in transformation of heredity in this series.

---

* Studies in Selections.

One transformation of heredity is a large family. This is assumed very frequently but erroneously as decided evidence against degeneracy. Not only is this not true, but the reverse under the most ordinary observation is the fact. Indeed, as Herbert Spencer has shown, with increase in growth and specialization, decrease in the explosive manifestations of life must occur. Among these explosive manifestations in early biologic history is the function of reproduction which is common to all cells. With advance in evolution the functions of cells become specialized and the extent of reproductive power is decreased. This specialization Spencer designates individuation. In degeneracy the organism returns to the lower type and consequently tends to a reversion of individuation. From this results the plural and frequently repeated births already pointed out as a biological stigma of degeneracy in the phthisical. The same condition obtains in other degenerates. Valenta* had under observation two epileptics (mother and daughter) who illustrated very decidedly the biologic sigma to which reference has just been made. The mother had thirty-eight children—six times twins, four times triplets, and twice quadruplets. The daughter at the age of forty had thirty-two children—three times twins, six times triplets, and twice quadruplets. Ninety families of degenerates coming under my own observation averaged eleven children each. Triplets, quadruplets, and twins were more than ten times as frequent as among the population taken as a whole. The occurrence of large families should hence be regarded not as an expression of advance but as an expression of degeneracy. The teachings which have been entirely too prevalent as to the status in evolution being determined by progeny have cultivated a factor of degeneracy which, when it occurs in a family, must be regarded merely as one transformation of malign heredity. Another biologic stigma of degeneracy on which considerable stress is laid as an evidence of health is the occurrence of one instance of old age in a family of short-lived people. In Morandan de Monteyel's studies of the biology of degenerates such instances were remarkably frequent. In this instance, while there is an expression of healthy atavism, there is also an expression of degeneracy which, predisposing the organism to yield to slight causes of disease, thereby prevents it from being deeply affected by them. On the other hand the absence of any deep emotional feeling enables such an organism to ride through worry like a cork through an ocean storm, and thereby to survive. It was to this last factor that Goethe referred in his prescription for long life :

---

* Berlin Med. Wochenschrift, Feb. 15, 1897.

> "The method is revealed:
> Without gold, or magic, or physician,
> Betake thyself to yonder field,
> There hoe and dig, as thy condition ;
> Restrain thyself, thy sense and will,
> Within a narrow sphere to flourish.
> With unmixed food thy body nourish ;
> Live with the ox as ox, and think it not a theft
> That thou manur'st the acre which thou reapest.
> That, trust me, is the best mode left
> Whereby for eighty years thy youth thou keepest."

—*From Medicine.*

AN ITEM ON CAUSATION AND PREVENTION OF DISEASES OF WOMEN.

By J. STEVEN BROWN, M.D., Salisbury, N. C.

Read before the North Carolina Medical Society, June 8, 1897.

Deeper than we are prone to look we must search for many causes of disease.

By making us lead lives distorted and empty because of our imbecile subservience to the habits of society ; by making us follow injurious fashions in dress ; by forcing upon us unsuitable or unhealthy food, and often at unreasonable hours ; by innumerable artificial and superficial rulings, present American Society demands many a blow at good health and genuine happiness. Errors in diet are often committed from ignorance or impecuniosity, or, forsooth, because the artificial guest is more willing to sin against Him who created her and gave her a body to account for, than to run the risk of offending her hostess by a seeming lack of appreciation.

A load of skirts is hung from the compressed waist, and the wearer seems not to know why she is tired and full of aches.

She cramps her lungs, her bowels and her feet in the vain Chinese hope of improving on the shape and size given these organs by their creator.

Forced mental training often saps the vitality of the budding woman and seriously disturbs her physical development.

Just as in the days of our grandmothers and their predecessors, those who are unfit for motherhood, because of youth or age or hereditable disease, still marry and are given in marriage. To many who are physically well qualified, maternity has become a burden instead of a joy, and hundreds of invalids must refer the beginning of their invalidism to criminal abortion done for the sake of avoiding pain and care, and for enjoying the so-called sweets of society. These and many like causes demand proper preventive treatment. But they are not the cause that most urgently calls for removal.

Statistics are not sufficiently abundant, complete and unprejudiced to make them of much value. Still I venture the statement that specific vaginitis and its extensions cause more trouble than any other pelvic inflammations. And yet while the prostitute claims these inflammations as her rightful inheritance, she can by no means claim a monopoly on them. Thousands of thoroughly virtuous women are daily called upon to help reap the wild oats of their husbands; and thousands of these husbands are called virtuous men.

An ancient philosopher says that virtue is summed up in a knowledge of good. He who knows what is good will do good. Evil arises from ignorance. Men are immoral because they are not sure that their acts are wrong.

While we may not fully agree with Socrates, it is quite probable that if men and women and boys knew more about these matters, and the suffering that follows and spreads from improper sexual indulgence, a healthful wave of reform would sweep over our land and purify our murky atmosphere.

Unmarried men need to know that sexual indulgence is not at all necessary for their health and vigor and the maintenance of their virility. They need to know, and many of them do realize sadly, that it is not an essential factor in happiness, but always shows unhappiness as a part of its product. They need to know that occasional emissions are not inconsistent with good health. They need to know that gonorrhœa and its congeners are not cured half so easily as they are contracted, and that often when these diseases are not apparent, they are still latent, and may remain so for months and years. They need to know that hosts of women are victimized and made chronic sufferers because of these latent cases in their reformed husbands. Men need to know that sensualism saps both mind and body. They need to know that impurity of thought and deed dulls and debases man's ideas, and converts the glory of life into a miserable existence with no higher joys than fast-vanishing sensual pleasures. They need to know that the good Book, which gives so many instances of impurity among the chosen children, never commends that impurity, but always condemns it, and commands us to abstain from it.

To recapitulate:

1. One great crying *disease* among women is *Specific Inflammation* of the pelvic organs and tissues.
2. Its *cause* is impure intercourse.
3. *Prevention* is best secured by a reform in morality.
4. *Our Duty* as physicians is to tell the people plainly that prostitution and its kindred evils debase the mind, debauch the body and constantly curse and degrade the human race, the noblest of all things created.—*North Carolina Medical Journal.*

THE INFLUENCE OF SCHOOL LIFE UPON THE HEALTH OF CHILDREN.

By WILLIAM W. JOHNSTON, M. D.

The report of the United States Commissioner of Education for 1892 and 1893 shows that, at that time, there were 19,552,491 persons in this country between five and eighteen years of age. Of these 13,510,719 were enrolled in the public primary, grammar and high schools. The value of school property was $398,435,000; to support this enormous establishment the average expenditure per capita of population was $2.47. Hartwell says that in 1894, 90 per cent. of the population of Massachusetts, between the ages of five and fifteen, attended school; this number exceeding by 80,000 three times the number of persons of all ages engaged in agricultural pursuits in 1885, and falling but little short of the total number of those occupied in all the manufacturing industries of the State in the same year.

The influence of education upon health is not a new subject. Whether the school system of the United States has a favorable or unfavorable effect upon health is undetermined. Directly contrary opinions are held both among the laity and the medical profession of this country.

No serious effort has been made in this country, so far as I am aware, to gather such an amount of precise information, as would be sufficient to serve as a basis for correct judgment. For scientific and thorough investigations into the health of school children we must turn to Europe, and particularly to the monumental work of Hertel in Denmark and Axel Key in Sweden.

Why Investigations were Undertaken in this Country and in Europe:

As education became more widely disseminated, and as the standard, in all grades of schools, was raised and greater demands were made upon the pupils, physicians in this country and Europe began to observe a variety of morbid phenomena in school children that they believed to be due to the conditions of school life. Interest in the subject in Europe gradually became more intense, until 1877, when Finckelburg addressed the Congress of Hygiene in Nuremberg upon the injurious effect of excessive brain work upon youth. Immediately after this congresses, academies, parliaments and commissions inaugurated investigations into the health of school children, and later, journals began to be published devoted solely to this topic.

How and Where Inquiries were Conducted:

Many of the investigations pursued in European States were limited to the eyesight, or were of a personal character, and restricted in scope. But there were at least five series of investigations that were far reaching, and three of these were very careful and complete.

These five arranged according to date were:

1. Hertel's investigations in Denmark, 1881.
2. Danish Commission (Hertel), 1882.
3. Swedish Commission (Axel Key), 1883.
4. British Parliamentary Commission (Crichton-Browne), report published in 1884.

5. Warner's investigations in England, reported in 1892.

The facts collected in these five investigations give information as to the health of 104,629 school children (62,332 boys and 42,297 girls), of different ages, of all social conditions, rich and poor, from city and country.

6. Additional important inquiries were undertaken by Combe in Lausanne in 1892; 3650 children in all being studied.

7. Nesteroff in Moscow, 1890, 216 children.

8. Zahor in Prague, 1888, 1889, 1890, 4892 children (Zeitschr. fur Suchulgesundheitspfl., Hamb. u. Leipz., 1892, v, 557).

9. Hakonsen-Hansen's preliminary report of the Norwegian Commission under Faye and Hald, published 1894.

Methods of Inquiry.

The methods pursued in these different investigations varied in different countries. In England, where the examinations were conducted with the idea of combining accuracy with economy of time, scholars were subjected to inspection while at work and play, and both they and their teachers were questioned. This plan is open to criticism, and the unfavorable comments of the chief inspector of schools who accompanied Crichton-Browne, seem to be not without justice.

In Denmark and Sweden it was accuracy without economy of time which dictated the method of inquiry, and the plans were essentially the same in the two countries, and were very detailed and complete. Printed blanks containing questions as to each child's health, the amount of study at home, the character and duration of sleep, etc., were sent to the parents to be answered. The information thus obtained was submitted first to the family physician and then to the child's teacher for criticisms, corrections and additions, and afterwards the child's eyesight was tested and the weight was ascertained. These studies were made in November and December in Denmark, and in February and March in Sweden. The periods chosen were neither at the beginning of the school year, when the pupils were refreshed by their summer holidays (of ten weeks duration in Denmark and sixteen weeks in Sweden) nor at the end of the session after the fatigue of the year's work.

In a doubtful case the child was called well, and no incidental acute illness was included.

Investigations in the United States:

Interest in the health of the school children of the United States was awakened when the subject began to be accurately and scientifically investigated in Europe. In a short time considerable enthusiasm was shown in different localities, particularly in Michigan, Wisconsin, Maryland and Massachusetts, but it soon died out with the exception of a few spasmodic revivals.

Numerous articles bearing on the question have appeared from time to time in medical journals, reports of school boards, of boards of health, in text books of medicine and hygiene, pedagogical journals, and in the reports of the United States Commissioner of Education. These articles with few exceptions have been of a general character, and do not include observations on any extended scale.

The school children of the country, in some localities, have been weighed and measured, and several investigations into eye conditions and a very few inquiries of a more general character have been undertaken; but as far as I know no thorough examination of the state of health of pupils in American public schools has been made. In a few instances circular letters have been sent out by individuals to physicians, superintendents of schools, members of school boards, and the clergy, and from the replies received an effort has been made to reach some exact conclusions. The answers were, however, simply expressive of individual opinion, and the method lacked comprehensiveness and thoroughness. The number of scholars studied was small, and the answers to the questions vague and lacking in scientific precision; the accumulated data and conclusions were therefore of no great value.

Facts Ascertained by Inquiries in Europe:

The European investions showed very clearly that there was a surprising amount of ill health among school children, that the percentage of morbidity varied slightly in different countries, and that girls suffered more than boys.

Thus in boys' schools in England there was found a morbidity of 20.7 per cent. (Warner); in Denmark, 29 per cent. (Danish Commission); in Copenhagen, 31.1 per cent. (Hertel); and in Sweden, 37.2 per cent. (Swedish Commission).

In girls' schools there was discovered a morbidity in England of 15.6 per cent. (Warner); in Copenhagen, 39 per cent. (Hertel);

in Denmark, 41 per cent. (Danish Commission); in Lausanne, 42.9 per cent. (Combe), and in Stockholm, 61.7 per cent. (Swedish Commission).

In arriving at these figures, accidental or acute illness and short sight were excluded. As a rule morbidity was greatest among the scholars of the better social class.

A number of chronic conditions, varying in degree from slight deviations from the normal state of health to actual disease, made up the sum total of morbidity.

The following conditions found in Denmark and Sweden were considered abnormal and formed the basis for the estimation of a morbidity percentage: chlorosis, epistaxis, anorexia, nervousness, headache, short sight, other eye affections, (excepting ophthalmia), spinal deformities, scrofula, etc.

In England, Warner discovered defective development, abnormal "nerve signs" low nutrition, mental dullness, "eye cases" (ophthalmia excluded), lateral curvature of the spine, etc.

Crichton-Browne, in the London elementary schools, bases his statistics upon the presence of nervous disturbances, habitual headache, sleeplessness, muscular twitchings, stammering, neuralgia, short sight, squint, etc.

According to Hakonson-Hansen the principal defects among the girls of the Christiania (Norway) schools, were found to be anemia, neurotic conditions, headache, chronic digestive disturbances and spinal deformities.

Facts Ascertained by Inquiries in the United States:

Examinations into the morbidity of the school children of the United States have been so few and so fruitless that the superintendent of physical training in the Boston public schools was able to say without fear of contradiction, as late as 1894, that we have no knowledge whether school life is beneficial or prejudicial to health, since no one has taken the pains or been paid to find out. He continues: "It is scarcely too much to say that it would be easier under the present conditions to estimate the losses entailed by hog cholera or cattle plague throughout the Union than to determine the number of children who succumbed annually to school diseases in the United States."—Hartwell. Whenever investigations have been made in this country the conditions found have been similar to those in Europe.

Relation of these Variations from Health to School Life. Are they Constant, and are they Due to the Conditions of School Life?

The same morbid phenomena have been met with so repeatedly in the different inquiries undertaken that they may be said to be constant accompaniments of school life, and Key calls chlorosis, nose bleed, headache and myopia true school diseases. In certain schools in the south of Scotland, where the children lived and work amid the most favorable surroundings, the same varieties of ill health were observed by Crichton-Browne, though with less frequency and in a less pronounced degree than in less favored localities.

a. Contral experiments.

As pointed out by Burgerstein—who translated Axel Key's reports into German—we cannot fix upon a normal percentage of morbidity because we cannot find a number of children brought up under ideal circumstances or in an ideal environment. Since nearly every child of school age goes to school, there are not a sufficient number of children out of school for contral observations. It makes but little differenee whether the health of school children is better or worse than in the case of those who do not go to school; it is bad enough and should be made better; the condition exists and it is our duty to remedy it.

b. Relation of morbidity to age and progress from class to class.

To aid in determining whether the ill health constantly found in school children is due to the conditions of school life, it will be well to study the relation of morbidity to age and the progress from class to class.

All observers agree that morbidity increases with age and more particularly with progress from class to class, and statistical corroboration of these facts is abundant and strong. The results of the investigations of the Swedish Commission, arranged by Key in the form of a curve, and the combined results of the Danish and Swedish Commission and of Hertel's personal inquiry, similarly arranged by the latter, illustrate these points most graphically. The reader is referred to the reports of Key and Hertel since these curves are too complicated to be introduced here.

It has been demonstrated thus far that:

1. In Europe there is considerable ill health among children who attend schools.

2. Wherever and whenever investigations have been undertaken the same diseases and deviations from normal health have been constantly found; and

3. The percentage of morbidity increases with age, but more particularly with progress through classes.

For further inquiry let us select certain conditions that from the physical characteristics of our people are likely to be met with in this country, (and in regard to some of which observations have been made in the United States), and try to discover to what extent these conditions are met with among European and American school children, and how they are aggravated by school life.

The Eye-Sight:

The prevalence of near sight and its increase with age and with progress from class to class in the children of European schools has been noted by a large number of observers. The Swedish Commission found an increase in near sight from 6 per cent. in the lowest to 37.3 per cent. in the highest classes of certain boys' schools, and this increase was always found to bear a direct relation to the length and amount of study. In girls' schools the same investigators found a gain in near-sightedness from 7.1 per cent. at eight years of age to 57.1 per cent. in the twenty-second year or over. Seggel noted an increase of near sight from 16.5 per cent. in the first to 54 per cent. in the eighth class of the Munich intermediate schools. In the London elementary schools 2.5 per cent. of the scholars in the first class and 9.2 per cent. in the sixth class were found to be near-sighted.

Cohn, of Breslau, whose name is familiar to all ophthalmologists, maintains:

1. That myopia increases with the demand made upon the eyes.

2. That the number of short-sighted scholars increases regularly from the lower to the higher classes in the educational institutions.

3. That myopia not only becomes more common, but worse in degree with advance from class to class.

In an examination of 10,000 children of all grades he found:

1. In country schools, 1 per cent. of short sight.

2. In elementary schools, 5.11 per cent.
3. In grammar schools, 20.40 per cent.
4. In colleges, 30.35 per cent.
5. In University of Tubingen, 79 per cent.

In 1896 Carter, among 8125 children in the London schools, discovered that but 39.15 per cent. enjoyed normal vision. Numerous other authorities could be quoted if necessary to prove that near sight exists in European schools, and that it increases in frequency and degree as pupils advance from the lower to the higher grades.

In the United States many opthalmologists have examined the eyes of many thousands of school children, and there is an abundant literature upon this subject. The results obtained by different investigators agree with each other and are, in many respects, similar to those observed in Europe. According to D. B. Smith in children under six myopia is rare. From seven to twelve years it increases 1 per cent. a year; from twelve to fourteen years, 4½ per cent. a year: from fourteen to eighteen years of age the percentage of increase is greater.

Examinations made in the Cincinnati schools showed an increase in near sight from 10 per cent. in the intermediate to to 14 per cent. in the high and 16 per cent. in the normal schools. In Memphis short sight was found to increase from almost nothing in the lowest to 15 per cent. in the highest classes.

In Columbus the increase was from almost nothing to 11.3 per cent. at seventeen years.

A similar condition of affairs was found in Kansas City and elsewhere.

In Circular of Information No. 6 of the U. S. Bureau of Education (1881) Calhoun says that the report of the examination of 45,000 school children in the United States irrespective of age, sex, color, in city and country, show that near sight increases from nothing in the lowest to 60 to 70 per cent. in the highest classes (*sic*).

The grade or degree of near sight increases as well as its frequency. Many more facts could be brought forward in proof, but those quoted are sufficient to show that school life has a deleterious effect upon the eyes of children.

Diseases or Disturbances of the Nervous System—Nervousness, Nerve Instability, Neurasthenia:

Nesteroff studied the school children of Moscow with a view of determining if diseases or disturbances of the nervous system existed and how they were influenced by school life. Examinations extending over four years showed 29.25 per cent. of the children in the schools thus affected. No distinctive disease marked by typical objective signs was met with, but the pupils were found to suffer from general disturbances of the nervous system chiefly neurasthenic in character. There was headache, (especially at the end of the day's lessons) with sleeplessness, gastralgia, peripheral neuralgia—mostly intercostal—neuroses of the heart (palpitation), rapidly induced psychic and mental weariness, accompanied by irritability and excitement, and in older pupils neuroses of the sexual apparatus.

Nesteroff's data show conclusively that these diseases or disturbances of the nervous system increase with age and with progress through classes—*e.g.,* from 8 per cent. in the first to 69 per cent. in the eighth class, and from a little over 8 per cent. at ten years of age to nearly 78 per cent. at the age of nineteen.

Warner has investigated the same subject in England. In about 11 per cent. of the children examined he noted certain abnormal "nerve signs." These consisted in instability in posture, in balance of hand, head and back; loss of tone in the orbicular muscle of the eye, finger-twitching, stammering, numerous small movements, occurring without apparent stimulation, and muscular eccentricity closely bordering on chorea.

The frequency and severity of nervous diseases in school children is further proved by the reports of the Registrar General of England, which shows that while deaths from zymotic diseases in children has considerably diminished, the morbidity from diseases of the nervous system has remained stationary.

In Massachusetts the proportion of deaths from diseases of the nervous system to deaths from all causes increased in the decade of 1880–1890.

Among the public school children of New York City, Hamilton, in answer to inquiries, ascertained that 20 per cent. of the pupils in the primary schools (average age, seven years) and 2 per cent. of those in the grammar schools (average age, twelve years) twitched their hands, faces or one side of the body.

His observations show that, contrary to the conclusions of others, there is a lower percentage of nerve disorders in the higher grades.

Lincoln, Folsom and others describe the familiar nerve-sick child, but add nothing to our knowledge of the prevalence of nervous disease among the pupils in our schools.

Headache:

Is headache met with in school children and does school life increase or diminish its frequency and severity?

Inquiry by Guillame in Paris, and Becker in Darmstadt, by Faye and Hald in Germany, and others, have shown that from 40 to 50 per cent. of the scholars in public schools suffer from habitual headache due to brain exhaustion from school work.

Of 6580 pupils in the London elementary schools 46.1 per cent. were found to be affected with habitual headache by Crichton-Browne. These headaches were of an anemic or neurasthenic type, the latter predominating, and were usually frontal. Girls were more often affected than boys.

It was found that there was an increase in habitual headache in relation to classes from 40.5 per cent. boys and 46.2 per cent. girls in the first class to 42.9 per cent. boys and 70.6 per cent. girls in the sixth class.

This same thing was observed by Key in the preparatory schools of Stockholm where there was an increase from 2.2 per cent. in the first to 11 per cent. in the fourth class, and from 4 per cent. at eight years of age to 44 per cent. at the age of thirteen.

According to Crichton-Browne, the headache of high school girls begins with the school term, grows more frequent and intense as it progresses, and disappears in the holidays to reappear with the beginning of school life.

The same effect of alternate work and rest was noted by this same observer in the children of the London elementary schools who suffered from habitual headache. In the morning 12.4 per cent. of the scholars had headache; in the afternoon 22.3 per cent., and with the evening's rest the percentage fell to 11.4.

Nesteroff observed similar headache in Moscow school children at the end of the day's lessons.

The facts already mentioned are corroborated by the results of investigations undertaken by Bystroff in St. Petersburg. Among 7478 school children 5 per cent. of those at eight years of age suffered from so-called school headache, and this increased to 28 to 40 per cent. between fourteen to eighteen years.

No data have been obtained as to the prevalence of headache in the school children of this country. Hamilton sent printed blanks to the public schools of New York City; from the replies received he asserts that 10 per cent. of grammar school and 15 per cent. of primary school children have headache. In this instance we have the opposite of what has been always found elsewhere, namely the existence of more headache in the younger children and lower classes.

I know of no other investigations on this subject in this country.

Sleep :

Sleeplessness, sleep-talking and sleep-walking, as accompaniments of neurasthenia, have been shown to be not infrequent in school children, and to be due to the conditions of school life. Crichton-Browne, notes that 38 per cent. of the pupils in the London elementary schools suffer from sleeplessness, the boys showing a higher percentage than the girls; also, in one school of three hundred and eighty-one boys he found one hundred and twenty-nine sleep-talkers and twenty-eight sleep-walkers; in one school of four hundred and thirty-two girls there were seventeen, and in another school of three hundred and eighty-two girls, twenty somnambulists. This observer learned that parents frequently complained to teachers that their children talked of lessons in their sleep, and arithmetic and sums seemed to be the chief disturbing element.

Suicide :

In Prussia, between the years 1883 and 1888 (Zeitschr. fur Schulgesundheitpfl, 1892, v. 229), two hundred and eighty-nine pupils in the schools committed suicide, of whom one hundred and seventy-nine or more than one-half were in the lower classes. Fear of examination or failure to be promoted, quarrels with teachers, morbid ambition, fear of punishment, and other incidents relating to school life, were the causes assigned by one hundred and twenty-one of those who destroyed themselves. There is no note of such a tendency in this country, at least none upon which any reliance can be placed.

Increase of Morbidity with Increase of the Number of Hours of Study :

In the Swedish and Danish inquiries the greatest care was taken to insure accuracy in determining the effect of the number of hours of study upon morbidity. The scholars were taken in small groups and every possible source of error was eliminated.

In Sweden it was found that the morbidity was 5.3 per cent. higher in those who worked over the average time, and in Denmark, 7 per cent. In those schools which made more than the usual demands upon the students, the per cent. of sick children exceeded the average per cent. of morbidity by from 3 to 10 per cent. in some classes. In the Stockholm schools, especially burdened by work, the per cent. of those in bad health exceeded the average morbidity from 4 to 7 per cent. Moreover, it was ascertained that the morbidity increased pari passu with the number of school hours.

One cannot fail to have been struck, from what has gone before, with the dissimilarity between the general amount of ill health in the schools of Sweden and those of Denmark. To emphasize this point it is only necessary to compare the statistics obtained by the Swedish and Danish observers, which show that the morbidity among boys in Denmark is 29 per cent. and in Sweden 37 per cent.; while among girls in Denmark it is 41 per cent. and in Sweden 61.7 per cent.

I was myself at a loss to account for this, until I ascertained that the demands upon the scholars' time were greater in Sweden than in Denmark. In each country about four hours of study daily are required of the lower classes, while in the upper classes of Denmark nine to nine and a half hours, and in Sweden ten to eleven hours, are necessary. In girls' schools the number of hours spent in study is far greater in Sweden than in Denmark.

In the United States the relation between the number of hours spent in study and the amount of ill health has been investigated by competent medical men in the high schools of Cleveland, Ohio, and the results placed on record. These results make it quite clear that appetite, sleep, headache, backache, eye sight, menstruation and general health were affected in direct proportion to the amount of study in hours.

There was nothing peculiar to the Cleveland High School at this time; the course of study and other conditions of school life were like those existing elsewhere.

We have, as has been seen, but few data upon which to form an idea of the amount of ill health in our American schools.

We have enough to show, however, that if the amount of necessary study is a factor in producing or increasing morbidity, we had, at the time all these investigations were being conducted, no advantage over Europe, indeed, we were at a disadvantage compared with the Old World.

In the high schools in Michigan in 1882 thirteen hours of solid brain work were required daily. The Ann Arbor high schools in 1882 demanded eight hours study a day for six days, beside the time spent in recitations.

Decrease in Attendance-Causes :

It may have been observed in some of the percentages that have been quoted that the number of scholars has diminished and the curve of morbidity declined in the last years and in the highest classes of the various schools investigated. The diminution in the size of the classes by the departure of those who left school to enter higher educational institutions or business, would have affected the morbidity percentage, if at all, by increasing it, the strong and successful going out, sickly and backward remaining behind. This, therefore, cannot account for a descending morbidity curve at the end of school life. The true explanation is that the delicate and ill have fallen out, unable to keep up in the race, and the strong and lusty are left behind at school.

The robust health enjoyed by girls and young women in certain of our colleges, in spite of the severe tasks imposed upon them, is frequently used as a basis for an argument thought to be convincing and unanswerable. It is maintained, that, because they enjoy good health, therefore there is no overpressure in our schools, and nothing wrong with our system of education. This argument is fallacious. No account is taken of the many who have collapsed in the struggle of school life. Our higher colleges for girls are attended by the fittest who have survived in this struggle.

Faye and Hald have proved that the apparent increase in the health in the highest classes of the Christiania (Norway) schools is due to the elimination of the sick and fragile. In spite of this withdrawal they maintain that 13 per cent. of the picked girls who remained in school until graduation left it hampered by broken health of greater or less severity. Burgerstein and others note the same thing.

But further European statistics are unnecessary, since the decrease in school attendance by reason of illness, and its cause, overpressure, is brought home to us by the results of the Cleveland investigation, already referred to. Of 800 pupils in the Cleveland High School 25 per cent. of the girls and 18 per cent. of the boys withdrew in one year for various reasons; 75 per cent. of the girls who left did so wholly or in part on account of bad health, and nearly 50 per cent. of the boys were in bad health while at school, and 33 per cent. of those who withdrew were compelled to do so by reason of physical disability.

Winsor says that out of a class of seventeen pupils at Waltham High School, in Massachusetts, nine were removed in their graduating year on account of ill health.

Conclusions:

From the foregoing it is clear that wherever investigations into the health of school children have been undertaken the following facts have been ascertained, namely:

1. That there is a large amount of ill health among school children.

2. That this ill health is due to a variety of diseases and disturbances of function.

3. That the same diseases and disturbances exist everywhere and are constantly present.

4. That they are aggravated by the conditions of school life.

5. That they are increased in direct proportion to the number of hours devoted to study.

6. That they often lead to a premature withdrawal from school, and are manifest in a large proportion to those who remain to the end.*

---

*The writer wishes to express his obligations to Dr. George W. Johnston for the collection of most of the material upon which this paper is based and for other assistance which associates him closely in its preparation.

CRIMINAL ABORTION: ITS PREVALENCE, ITS PREVENTION, AND ITS RELATION TO THE MEDICAL EXAMINER.

BASED ON THE "SUMMARY OF THE VITAL STATISTICS OF THE NEW ENGLAND STATES FOR THE YEAR 1892," BY THE SIX SECRETARIES OF THE NEW ENGLAND STATE BOARDS OF HEALTH. *

By H. R. STORER, M.D., of Newport, R. I.

Read before the Rhode Island Medico-Legal Society at Newport, R. I.

A recent failure to obtain conviction in a trial for criminal abortion in Rhode Island, the case having been thought a clear one, is said to have carried such discouragement to several of the members of this Society that they are unwilling to have even the general subject referred to. Upon the other hand, if we acknowledge the frequency of the crime, and of this there can be no question, one would suppose that the time was peculiarly appropriate for attempting to ascertain the real cause of what may have been not an exceptional instance of failure of justice, and, if possible, to find its remedy. Towards this a brief summary of the medical anti-abortion movement, comprised within the past half century, may perhaps be of aid.

Forty years ago, on December 14, 1858, in a paper read at Boston, before the American Academy of Arts and Sciences, upon the "Decrease of the Rate of Increase of Population" then, as now, progressing in this country, I attempted to explain a problem that was already disturbing political economists. The decrease of the rate of increase had been noticed and commented upon, but its complete explanation unreached. The existence of one "prudential check," the prevention of impregnation, either by abstinence or through incompleted or otherwise imperfect coition, had been recognized, but it was evidently insufficient of itself to solve the problem. Sexual instinct and passion are universal. It was unreasonable to suppose that they had been brought so generally under control as to merely prevent sexual intimacy, especially where this had been rendered practically imperative

---

* It will be perceived that it is not claimed that abortion is the only, or even the main cause of the present decrease of the rate of increase of our population, but that, in addition to other influences, it does play an important part.

through marriage. It was equally futile to consider that the majority of mankind, if allowing themselves such indulgence, would bear arrest upon its very threshold. I was led to the true answer to the question not as a medical jurist, philanthropist or social reformer, but solely as a gynæcologist. Being struck by the prevalence of certain forms of pelvic disease after abortion, and by the frequency with which patients in easy circumstances acknowledged to me in such cases that there had been an enforced shortening of pregnancy—if it had been merely the destitute I should not have been so much impressed—I induced medical friends to institute similar inquiries, and they found that almost invariably when the same leading interrogatories were put, identical replies were elicited. I had soon a body of evidence that justified me in suggesting that criminal abortion, and this alone afforded the missing link, the complete explanation of what had previously been inexplicable, in relation to the decrease of the rate of increase of our population. The paper referred to, read before so prominent a body as the American Academy, of which I was a Fellow, created a perfect whirlwind of surprise and indignation in Boston. While my facts could not be gainsaid, I was told that to expose them publicly would but increase the evil; was upbraided and condemned for exhibiting, even in the privacy of a scientific society, this blot on the good name of New England, and was begged to postpone publication outside of the medical profession until I had obtained from it a more general corroboration of the position that I had assumed. In deference to the judgment of so many of my seniors and friends, I deferred the publication of the Academy paper, and it did not appear till nearly ten years after, in Silliman's New Haven journal, *the American Journal of Science and Arts,* for March, 1867. So extensive and authoritative were its statistics that there could be no longer doubt, and its conclusions were at once accepted by scientists in this country and Europe.

Previously to the date mentioned, 1858, there had been for a few years a revival of sentiment regarding the inherent heinousness of induced abortion. From the earliest days of medicine it had been reprobated, but a technical cloudiness of idea, or of expression, had crept into the medical language and that of the law. Quickening, so called, a sensation that by no means occurs with every pregnant woman, had come to be explained as meaning "with quick child," rather than "quick with child." In other words, many believed that before the fourth month, or thereabouts, the fœtus was but a portion of its mother and not endowed with independent life—an opinion that in these days of each person being their own judge in questions of morality and religion, had become the prevalent one. In 1839 the awakening of interest in this matter may be said to have commenced, for in that year the elder Hodge, of Philadelphia, most earnestly insisted upon conception as the true beginning of fœtal life. He was followed by Radford, of Great Britain, in 1848, and in 1855 by my father, then Professor of Obstetrics and Medical Jurisprudence in Harvard University, who was perhaps the first to point out the disastrous physical results of criminal abortion to the mother, as he was also in the matter of ordinary incomplete coition, as regards the subsequent health of both parties concerned.* None of these gentlemen, however, seem to have entered the at that time somewhat thorny path that connects induced abortion with political economy. I have always frankly acknowledged that it was from my father's recognition of the effect of abortion in producing pelvic disease that my attention was first drawn to the subject. Had it been otherwise I might never have pursued the inquiries which led me to appreciate the frequency of the crime.

As has been seen, I was compelled to take the course that had been urged upon me by the Academy. A year previously, in 1857, I had brought the question of the prevalence of criminal abortion, as evidenced in gynæcological practice, to the attention of the Suffolk District Medical Society, of Boston, which comprises all the practitioners of that city in good standing. I was there peremptorily challenged by the older men, who considered the investigation both injudicious and improper. Several of these, who were afterwards my critics at the Academy, were determined to prevent the threatened scandal, as they considered it. One of them, a professor at Harvard and the leading physician of Boston, thought to annihilate me by explaining that he had been in practice for nearly fifty years (he began in 1810), and had never known a single instance of criminal abortion, and here was a young man who had been his pupil, soberly relating the histories of scores of such cases. The only answer required was to ask Dr. B. if he had ever asked a patient of his if her miscarriage had been from an avoidable cause. His reply was: "Never; for it would have been an insult to put to a lady such a question." From that moment the attention and the cordial co-operation of the profession were gained. In those days, though a portion of the miscarriages were of course recognized as such, many others were supposed to be cases of mechanical or membranous dysmenorrhœa, and no questions were asked or examinations made, gynæcology being still in its infancy. The Suffolk District Society at once led the movement by appointing a committee consisting of the late Drs. Henry I. Bowditch, Calvin Ellis and myself, upon whose report the matter was carried to the State Society, to the end that through its aid the Massachusetts statutes might be made more correct, more intelligible, and more efficient. There had been thirty-two trials in that State for abortion from 1849 to 1857, and not a single conviction. The State Society thereupon appointed still another committee to report to its councillors, whose action was to be final. Of this committee I was the youngest member. It took advantage of my temporary absence from the State, and without notifying me or in any way recognizing my existence, to report that "the laws of the Commonwealth are already sufficiently stringent provided that they are executed," and the councillors were but too glad to decide accordingly. Thus did the State Society of Massachusetts in 1858, by its refusal to assist in rendering convictions possible, become so far directly accountable for the increase of the crime. In 1857 I had papers upon the subject in the *New York Medical Journal* and the *New Hampshire Journal of Medicine*, in 1859 in the *American Journal of the Medical Sciences* and the *Medico Chirurgical Review*, and for a series of years in the *Boston Medical and Surgical Journal*, and elsewhere. In 1857, at its meeting at Nashville, the subject was presented to the American Medical Association—which I had joined in 1856—a committee was appointed, and its report was made at the meeting at Louisville in the ensuing year. My associates upon the committee were: Drs. Blatchford, of New York; Hodge, of Pennsylvania; Pope, of Missouri; Barton, of South Carolina; Lopez, of Alabama; Semmes, of District of Columbia; and Brisbane, of Wisconsin. Their standing in the profession was guarantee of their conservatism and their faithfulness in the inquiry. It interested them all, and they personally contributed towards the general decision. Their report was accepted, and the resolutions appended were unanimously adopted (*Trans. Amer. Med. Assoc.*, xii, p. 75). The report pointed out that there were especially three causes of the general demoralization as regards child-bearing. First, a widespread popular ignorance of the true character of the crime; second, that the profession themselves are frequently supposed careless of fœtal life; and third, the grave defects of our laws, both common and statute, regarding the independent and actual existence of the child before birth, as a living being. The Association formally presented a memorial to the Legislative Assembly of every State in the Union with the prayer that its laws upon abortion might be revised, and as formally requested the zealous concert of the various State Medical Societies in procuring the action indicated.

---

* It may here be proper for me, six years after my father's death, to refer to the way in which he too was persuaded to long silence upon this most important question. In November, 1855, in his introductory lecture to the medical class of Harvard University, he entered at length into its discussion. When the address was printed, this portion of it was suppressed at the request of his colleagues, lest its publication might be "injudicious." It did not appear until seventeen years afterwards, 1872, when, under the title: "Two Frequent Causes of Uterine Disease," it was given in full, as it was written. (*Journal of the Gynæcological Society of Boston*, March, 1872, page 194, and September, 1872, page 164). The suppression was warmly regretted at the time of its occurrence by the *Boston Medical and Surgical Journal.*

Subsequently, the Association awarded its gold medal for an essay upon "The Physical Evils of Forced Abortions," and it was published in its *Transactions* for 1865. In the hope that if these evils were more frequently known, and their gravity appreciated, much might be done towards the suppression of the crime, the Association authorized, by special vote, the republication of this essay for general circulation, and it thus reached to the extent of thousands of copies, the women of the country; physicians and clergymen, both Protestant and Catholic, vieing with each other in its distribution among their patients and parishioners. Its title, by sanction of the Association, was, "Why Not? A Book for Every Woman." Till 1872, the demand for it continued unabated.* It was found, as the Association had anticipated, that where religion and morality had failed, the fear of resulting physical lesions exerted a wonderful deterrent influence, and hundreds of women acknowledged that they were thus induced to permit their pregnancy to accomplish its full period.

---

* In view of the fact that where wives were themselves opposed to abortion, their husbands often strongly favored it, and that at the time of many marriages it was soberly agreed between the contracting parties that

I was then for several years absent from this country, permanently invalided, and upon my return, found that the publishers, engrossed by other matters, had permitted advertisement to cease. The book has, since that time, been virtually out of print, although applications are still quite often received for it. The last of them was from the Superintendent of the Territorial Board of Health of Oklahoma, and is dated July 17, 1897.

You are all familiar with what has since been done during the past twenty-five years, by yourselves and almost every other high-minded physician in personal attempts to stay the progress of the crime. Much has been written upon the subject, from various stand points, but fœtal murder still prevails, a dreadful monster that wounded at one point, evinces but fresh strength at others. For awhile it really seemed that the intellect of the people had been sufficiently interested and their recognition of accountability sufficiently aroused to produce a permanent impression for good, but the adults of those days are mostly dead, and their children and grandchildren form a new population, with fresh instincts and desires. The virility of men is as perfect as formerly, and the proneness of women to conceive, when approached, has not been impaired. Abortifacients are openly sold and publicly advertised, and the doctrine that the limitation of child-bearing is justifiable is daily preached. At trials, those most closely interested combine to suppress or distort evidence, hired "experts" assist them in doing so, and juries and sometimes judges do not seem to appreciate the true character of the offense. The newly created profession of medical examiners has barely attempted to secure convictions, but against their zeal and faithfulness and skill there

---

no children should result, a companion essay was prepared, directed to the same end as the former, and this was entitled, "Is it I? A Book for Every Man." This also had a very large circulation.

In 1868, in conjunction with the late F. F. Heard, of the Boston Bar, there was published "Criminal Abortion: Its Nature, Its Evidence, and Its Laws," (Little, Brown & Co., Boston) as an aid to its prosecution in the courts.

is pitted an increased alertness of criminal advocates. In a word, the three great causes of the prevalence of abortion still exist: Popular ignorance of the real nature of the crime; apathy on the part of the medical profession—well indeed would it be were there no physicians who were suspected of being its principals; and third, defects in the law, sustained by long usage, and therefore the more difficult to overcome. The decrease of the rate of increase still goes on. It is now estimated that were there to be no accessions from without, the descendants of the original settlers of New England would entirely disappear within an easily calculated period. When one considers the already great proportion of our Catholic population, and that for religious reasons induced abortion practically never occurs among them, it is easy to appreciate how rapidly the early Puritan stock is becoming effaced.

The present condition of things has been forcibly shown by a recent New York cartoon. A block of eight brown-stone houses is depicted, on Fifth Avenue, facing Central Park, the streets between which it stands being given. The whole block is occupied during the season. It contains just fifty-one persons, not one of them being under fourteen years of age, the proportion being no child to the fifty. In front of the block there is emptiness and silence. Against this another block, on Eighty-eighth Street, between Lexington and Park Avenues, is shown. By the police census it contains eight hundred and ten inhabitants, of whom three hundred and twenty are under twelve, being two such to every five persons. Before these buildings there is always a joyous throng of infants and children.

But, you will ask, do the most recent statistics sustain these grave assumptions? Are not the official figures of our careful New England State Boards of Health more encouraging than were those of 1858? The following tables I take from "A Summary of the Vital Statistics of the New England States for 1892," compiled under the direction of the secretaries of the State Boards of Health of the six New England States, and published by them in Boston and London, which I owe to the Secretary of our Rhode Island State Board, Dr. Swarts, of Providence. There are even more depressing statistics than these that have recently been published of the New England States. I prefer only to quote those which have the combined endorsement of the State officials themselves.*

I. THE NEW ENGLAND LIVING BIRTH RATES AS COMPARED WITH FOREIGN.

In 1892, though the marriage rate in New England and its several States was slightly greater per thousand of population than in any of the fourteen European countries quoted in the Summary, their living birth rate was as follows:

Hungary, 40.3; Italy, 36.3; Austria, 36.2; German Empire, 35.7; Holland, 32; Scotland, 30.7; England and Wales, 30.5.

New England, 24.9; Massachusetts, 27.8; Connecticut, 24.5+; Rhode Island, 24.5–; Maine, 20.7; Vermont, 19.7; New Hampshire, 19.1.

In 1850 the birth rate in Massachusetts was 28.2 per thousand of population. In 1855, 29. During the twenty years, 1871–90, it sank to 25.7. In 1891 there was an increase to 27.4 and in 1892 to 27.8, but even with these figures it is much below what it was when I discussed the question in 1858.

A wide difference appears above. Has the mental culture of New England produced such general nervous exhaustion as to emasculate its men and to physically unsex its women? Or is it that, procreative instinct remaining the same, as shown by the many and early marriages, it is the maternal instinct that has been annihilated?

II. EXCESS OF LIVING BIRTH RATE OVER GENERAL DEATH RATE; 1892.

Scotland, 12.2; Norway, 11.9; German Empire, 11.6; England and Wales, 11.5; Holland, 11; Italy, 10.1; Denmark, 10.1.

New England, 5; Massachusetts, 7.2; Connecticut, 4.9; Rhode Island, 4.2; Maine, 2.3; Vermont, 1.8.

During the twenty years, 1871–90, in Connecticut it had been 6.5; in Rhode Island, 5.7; and in Vermont, 5.1, so that in these States the diminution since is extremely marked. In France, where the birth rate has fallen to 22 per thousand, which is larger than those of Maine, Vermont and New Hampshire for

---

*I confine my remarks to New England merely because its statistics are supposed more trustworthy. There is reason to believe that a similar condition prevails elsewhere in this country.

1892, it is now less than the death rate, and the condition is viewed with alarm by the whole civilized world.

How long can our own communities endure the present drain, and can it be explained save as I have done?

III. ILLEGITIMATE LIVING BIRTHS PER ONE THOUSAND LIVING BIRTHS; 1892.

Austria, 143; Bavaria, 132; Saxony, 127; Sweden, 101; Denmark, 101; German Empire, 89; Scotland, 84; Norway, 82; Belgium, 77; France, 74; Italy, 73; England and Wales, 48; Switzerland, 47; Holland, 30; Russia, 28; Ireland, 25 (Bertillon).

Massachusetts, 15; Rhode Island, 10.7; Connecticut, 10.3; Vermont, 10.2.

IV. NEW ENGLAND AS COMPARED WITH FOREIGN MARRIAGE RATES; 1892.

The comparative marriage rate might be thought to have some bearing upon the general question. Though slightly larger in New England than in many foreign countries, the difference is not very marked. The general marriage rate in New England for the twenty years, 1871–90 was: In Rhode Island, 18.7 per thousand; in New Hampshire, 18.6; in Massachusetts, 18.1; in Connecticut, 16; and in Vermont, 15.6. In Austria, 16.3; German Empire, 16.4; England and Wales, 15.6; and in Italy the same.

1892: Hungary, 18.4; German Empire, 15.9; Austria, 15.6; England and Wales, 15.4. New England, 18.5; New Hampshire, 21.3; Rhode Island, 19.3; Massachusetts, 19; Vermont, 17.5; Maine, 17.3; Connecticut, 17.

Regarding the above, there can be no doubt that the registration is correct. Granting that ordinary morality among the unmarried is greater with us than in the foreign countries named, do not the tables that have been given show, in the light of almost daily newspaper reports, that where unmarried women in New England do become pregnant, a much larger proportion destroy their children in the early months?

V. THE MARRIAGE AND BIRTH RATES COMPARED; 1892.

Comparing the last figures with the decrease of the birth rate, there can be but a single deduction.

Marriage Rate: Hungary, 18.4; German Empire, 15.9; Austria, 15.6; England and Wales, 15.4.

Birth Rate: Hungary, 40.3; German Empire, 35.7; Austria, 36.2; England and Wales, 30.5.

Marriage Rate: New England, 18.5; Massachusetts, 19; Connecticut, 17; Rhode Island, 19.3; Maine, 17.3; Vermont, 17.5; New Hampshire, 21.3.

Birth Rate: New Enlgand, 24.9; Massachusetts, 27.8; Connecticut, 24.5––; Rhod eIsland, 24.5–; Maine, 20.7; Vermont, 19.7; New Hampshire, 19.1.

From this it may fairly be asked if our married women are more careful of fœtal life than are the unmarried.

VI. EARLY MARRIAGES IN NEW ENGLAND AS COMPARED WITH GREAT BRITAIN; 1892.

In England and Wales, according to Sir Brydges Henniker, the Registrar General, the mean age at which their women marry (as in 1895) is slightly over twenty-six years. In 1892, 18.8 per cent. of the women married in New England were under twenty years of age. In New Hampshire there were 27.3, and in Maine 27.6 per cent. This fact, with the usual disinclination of the very young to settle down quietly to the normal cares of married life, should also be taken into consideration.

VII. LIVING BIRTH DEFICIENCY IN NEW ENGLAND; 1892.

The registration officers of New England, in the publication quoted, state that the living birth rate in a community that is "thriving" should be not less than 27 per thousand, which is much below the average in the foreign countries that I have quoted. There was from this low standard a deficit in 1892 in Maine, of 4000 births and over; in New Hampshire, of 3000; in Vermont, of 1500; in Rhode Island of nearly 1000; and in Connecticut, of 2000; or, of nearly 12,000 in the five States. The registrars recognize in a foot-note this great deficit, and suggest that "in Maine and New Hampshire, in which registration has been operative for a shorter time than it has in the other States, the registration of births is considerably defective." They do not, however, say this of Vermont, Rhode Island and Connecticut, in which three States there was a deficit of between four and five thousand. Is it not quite certain that the deficit must have been in great measure from a far different cause than mere imperfect registration.

VII. STILL BIRTHS AT TERM IN NEW ENGLAND PER THOUSAND LIVING BIRTHS; 1892.

New England, 35.9; New Hampshire, 54.1; Rhode Island, 41.7; Connecticut, 40.2; Vermont, 36.1; Massachusetts, 34.8; Maine, 19.6.

Granting all that has been suggested by the registrars to deficiency in the registration of living births, it is evident that the same must be allowed in the case of still births, the reported number of which is far too great. During the half century since the introduction of anæsthesia in child-bed, the general disuse of craniotomy, and the less delay in waiting for nature to relieve itself, still births should now be more exceptional. Every one knows that this is not the case, and all are also aware that for every still birth at term, many of which are occasioned by blows, falls, intentional strains, and the like, inflicted upon herself by the mother, a great many abortions and premature births occur, but a very small fraction of which, even if known to the family physician, are ever reported to the registrar, while in the majority of these cases, unless the mother is in danger of death, the family physician is never called.

IX. BIRTHS TO NATIVE AND FOREIGN PARENTS IN NEW ENGLAND; 1892.

The following sentence from the same authorities who have been quoted (p. 58) has its bearing. "Among native parents the firstlings constituted 31.2 per cent. of the whole number of births, and among foreign parents they were 22.4 per cent. of the whole. The ratio of children who were the fifth, sixth, and upwards among foreign parents was much greater than it was among natives." I long ago showed in my paper to the American Academy, that this difference "is to be explained by the watchful protection exercised by the Catholic Church over fœtal life, and that there can be no question that the dogma on which this rests, the sanctity of infant baptism, has saved to the world millions of human lives."*

That these facts are true should be the greater reason for a Society like our own to exert itself anew, for surely such obstacles as we know exist can be overcome. All medico-legal societies and State organizations of examiners can combine towards improvement in the statutes regarding the crime. Offenders in our own profession can be discovered and pursued with great rigor; and the measures towards enlightening the ignorance and awakening the conscience of the community, which have been pronounced legitimate by the American Medical Association, can be renewed. Now, as formerly, the well founded dread of the physical consequences of abortion can be brought home to every pregnant woman. Such procedure cannot but secure success. How perfect this may prove will depend upon the persistence and earnestness of your movement. There can be nothing, you may all be certain, that individually or collectively you may undertake, that will more deserve the blessing of Almighty God.

---

* Since the present paper was read, it has been stated to me by a physician that, in his experience, Catholic women have proved equally guilty. I cannot believe that this can be so, save in his exceptional instance. Were it true, however, it would furnish the most cogent *a fortiori* evidence that the moment had come for renewed and earnest action by the physicians of America.

The Annals of Hygiene and of Medicine
PUBLISHED MONTHLY
SUBSCRIPTION, TWO DOLLARS A YEAR, IN ADVANCE
Address all communications to
HYGIENIC PUBLISHING COMPANY

All subscriptions to "THE ANNALS OF HYGIENE" are taken "until ordered discontinued," and no agent has authority to make any other arrangement. At end of time to which subscription has been paid or promised, a bill for a year in advance, with return envelope, is sent, and if journal is no longer wanted, the subscriber should mark "Discontinue" on the bill and return to us. A failure to so return bill is considered an order to continue.

COMMUNICATIONS SOLICITED.

We are always anxious to receive short communications—500 to 1000 words—on practical subjects pertaining to hygiene. To any one sending us an acceptable article, we will forward THE ANNALS OF HYGIENE for one year *free*.

EDITORIAL.

Beginning with this issue the ANNALS takes on new Editors and an additional name. The Hygiene Publishing Company is using every effort to make this journal rank among the highest, and have been encouraged by the many letters of approval received, all of them unsolicited, and therefore the more flattering.

We have received from the Imperial Granum Company a showing of the outspoken approval of the profession in their recent decision to appeal to the profession alone. Confining their advertising to the strictly medical press.

This, it seems to us, is as it should be, fair, open and bright by contrast.

We hear many prate of their love of the doctor, their entire dependency upon his judgment as to the merits of their preparations, and the extent of his patronage. But still too often, though unconfessed, they are striving to reach the public direct. Attempting to be on both sides of the fence at once.

We have noticed displays of the preparations of one of the largest pharmaceutical manufacturing houses in Philadelphia, in centrally located drug store windows in the city. What are these for, if not to attract public attention? Or, again, a fine display in the exhibition halls of the Philadelphia Bourse, a place, we might say, entirely for the public. We have no criticism to make of the Bourse, it is a grand and noble enterprise, but are against appealing to both doctor and layman, as this would seem to indicate.

One of the oldest and best known of the medicinal waters advertises extensively in the daily newspapers. A water that does not have the excuse of being a table water, and one whose name and trade has, we venture to say, been entirely made by the doctor's.

We could give many more examples, but are content to voice our belief that the fair and open policy is best, and is the one that will meet with greatest approval, and therefore success. We will certainly watch results with interest.

THE AMERICAN PUBLIC HEALTH ASSOCIATION.

The Twenty-fifth Annual Meeting of the American Public Health Association (its Silver Jubilee) will be held in Philadelphia, October 26th, 27, 28th and 29th.

This Association, which has been steadily growing ever since its organization, is now by far the most important body devoted to the advancement of public health that meets in the Western Hemisphere. It has held very successful meetings in Canada and Mexico, and has a large membership among the health officers in the republics to the south of us. It is to be hoped that Philadelphia will furnish to this important international body entertainment in every way creditable to her reputation for hospitality.

From the first, the work of the organization has been largely educational; and some of its prize essays have had a wide circulation and important influence. The presence of such a large gathering of men devoting their lives to the promotion of public health, cannot fail to exert a very important influence in developing a proper appreciation of the importance of this kind of work in the city and region where the meeting is held.

It also offers an opportunity to bring together a collection of new sanitary appliances, disinfecting apparatus, health foods, etc., in the way of an Exhibit conducted under the auspices of the Association, which may have a more immediate and extended educational value than the formal papers and discussions of the meeting. Such an Exhibit was held and proved very attractive at the recent meetings of the Association in Brooklyn and Buffalo; and such an exhibit is being arranged for, to be held in connection with the coming meeting, at the Horticultural Hall on Broad Street. Horticultural Hall is the finest exhibition hall in the country, and in it was held the recent very successful exhibit of the American Medical Association.

This Exhibit will be brought prominently to the attention of the members of the protective associations, and of the medical profession, the teachers, and others who are especially interested in personal hygiene and public health. It will afford an opportunity for seeing the most recent and valuable improvements in sanitary appliances, and also for learning of the work done by Boards of Health. Several of the most important Health Offices in the country will make exhibits of their methods of work and statistics, showing the results they have accomplished. Among those who have already taken space for this purpose are the health authorities of Brooklyn, New York, Pittsburg and Philadelphia.

Those having appropriate articles to exhibit can arrange for space by applying to the Chairman of the Committee on Exhibits, Dr. Edward Jackson, 1633 Locust Street, Philadelphia.

BOOK REVIEWS.

CONSTIPATION: In Adults and Children. With Special Reference to Habitual Constipation and its Most Successful Treatment by the Mechanical Method. By H. ILLOWAY, M.D., formerly Professor of the Diseases of Children, Cincinnati College of Medicine and Surgery; formerly Visiting Physician to the Jewish Hospital, Cincinnati; etc., etc. Published by The Macmillan Company. Price, $4.00.

This is an extremely useful and timely work. Probably no disease is more prevalent or troublesome than constipation; as the foundation of many more serious diseases it should be carefully studied and watched. This book is well gotten up, and with its fourteen chapters and many illustrations seems to fully cover the subject and to be a necessity for the library.

PRINCIPLES OF MEDICINE. Designed for Use as a Textbook in Medical Colleges and for Consideration by Practitioners Generally. By CHARLES S. MACK, M.D., Professor of Materia Medica and Therapeutics in the Hahnemann Medical College and Hospital, Chicago. From The W. T. Keener Company. Price, $1.00.

REPRINTS RECEIVED.

"The Effect of Kindergarten Work on the Eyesight of Children." By CASEY A. WOOD, M.D., Chicago. *New York Medical Journal.*

"Sanitary Problems Connected with Municipal Water-Supply." By PROF. W. P. MASON, Troy, N. Y. *Journal of the Franklin Institute.*

We also have received a number of annual reports from Boards of Health in different parts of the United States and Canada.

We have received through the kindness of Dr. Guy Hinsdale, Secretary and Treasurer of the Society, a copy of "The Transactions of the American Climatological Association for the year 1897." The fourteenth annual meeting of the Association was held in Washington, D. C., with a large number of members and guests present. The papers read and printed in the "Transactions" are most interesting and able, and we shall from time to time give our readers the benefit of them through extracts, regretting space will not permit us to print in full.

TINNED FOOD.

It cannot be doubted that certain foods preserved in tins afford an auxiliary and convenient source of food-supply which cannot well be dispensed with, and, that being so, any suggestion calculated to ensure the wholesomeness of the food so preserved is entitled to every consideration. We do not believe that the mischief that now and again arises from the consumption of tinned food is referable to the presence of metal. Tin is a comparatively harmless metal, while the iron over which it is veneered is quite free from risk. The lead in the solder employed may, however, give rise to poisoning, but we believe that so well is the sealing process done that cases of this kind are rare. The dangers of tinned food generally arise from an inherent change in the food itself, and there is no doubt that the longer the food is preserved the greater is the chance of its being unwholesome, while, as is well known, as soon as the food thus preserved is exposed to the air certain changes rapidly set in, and for this reason the food should be partaken of as soon as possible after the tin is opened. Dr. Sykes, the medical officer of health of St. Pancras, makes what would appear to be a useful and practical suggestion in his annual report, which is that the law should provide that all tins containing tinned food shall have stamped upon them the date of tinning. Assuming that the correct date of tinning were thus stamped upon the tin the public would be able to judge in some measure of the wholesomeness of the contents, since it is reasonable to suppose that the enclosed food would not improve on prolonged keeping. We trust that the suggestion will be brought before the notice and consideration of the proper authorities.—*The Lancet.*

NOTES AND COMMENTS.

TURKISH BATHS.

"The essential peculiarity of the Turkish, as distinct from all other forms of baths, is the very much higher temperature to which the bather is subjected. In the hottest room the temperature may be from 250 degrees to 300 degrees F., that is, about the temperature at which an oven is kept for the baking of puff pastry, and considerably higher than is required for ordinary cakes or for baking meat. Under these circumstances the safety of the bather depends on two things—his power of perspiring and the power possessed by the air in the bath of evaporating his perspiration. The life of the bather depends on the air remaining far from saturated with watery vapor. If, in consequence of any deficiency of ventilation, this hot air was to become saturated with moisture, evaporation from the bather's skin would cease, and he would be steamed alive His safety depends absolutely and entirely on evaporation from the surface of the skin and the bronchial mucous membrane. This being so, it is obvious that the bather will suffer distress, and, in fact, be affected with partial heat stroke, even when the ventilation is good, if his own capacity for perspiration is diminished."

Since in some persons heat, when applied to the mucous membrane of the bronchial tubes, stops the breathing, this alone may suffocate the bather, although defective perspiration or heart strain is a more common cause of trouble. The article goes on to say:

"It is for this reason that Turkish baths are so often dangerous to those who suffer from organic heart disease. Where a comparatively sound heart labors to drive impure blood through contracted blood-vessels, we may well imagine that the opening of the cutaneous circulation by a Turkish bath may actually lighten the load upon it. But where the heart itself is feeble and its valves imperfect, it is incapable of acting efficiently at the greater speed required, and sudden failure may result. Besides this, it must be remembered that a Turkish bath is a gymnastic exercise to the blood-vessels as well as to the heart, and thus we come to the generalization that, while the Turkish bath is a harmless luxury to the man with a good heart and elastic vessels, it is a dangerous performance in the opposite case.''—*The Hospital.*

WORTH KNOWING.

The following strong tribute to the merits of Imperial Granum is from one of the most eminent physician of Philadelphia.

I have had faithful trials made of Imperial Granum, and can announce it to the peofession as a good, reliable food as a substitute for mother's milk in little babies afflicted with any digestive derangement, but especially in enteritis or what is commonly known as summer cymplaint.''

Physicians can obtain samples of this most valuable food free, charges prepaid, on application to John Carle & Sons, 153 Water Street, New York City.

Listerine

THE
STANDARD
ANTISEPTIC

LISTERINE is to make and maintain surgical cleanliness in the antiseptic and prophylactic treatment and care of all parts of the human body.

LISTERINE is of accurately determined and uniform antiseptic powder, and of positive originality.

LISTERINE is kept in stock by all worthy pharmacists everywhere.

LISTERINE is taken as a standard of antiseptic preparations: The imitators all say ''It is something like LISTERINE.''

LAMBERTS'
LITHIATED
HYDRANGEA.

A valuable Renal Alterative and Antilithic agent of marked service in the treatment of Cystisis, Gout, Rheumatism, and diseases of the Uric Diathesis generally. . . .

DESCRIPTIVE LITERATURE UPON APPLICATION.

LAMBERT PHARMACAL COMPANY **ST. LOUIS**

PUBLIC BATH-HOUSES.

The following suggestions, taken from a published report of the Committee on Care and Management of the Brookline (Mass.) Public Bath seem timely and to well cover the field. We cannot too often present these ideas or impress them upon our readers, whether at seashore, country or home, as much harm can be done by an imprudent bath.—Editor.

1. Do not enter the bath immediately after a meal. If from mental or physical labor one feels exhausted, he should rest before going into the water.

2. "Cooling off" while undressed is contrary to all good sense. Cool off before undressing; never leave the skin unprotected. If the action of the heart and the respiration have become normal after exercise, a warm or even moist skin need not prevent one from plunging into the bath; but, on the contrary, it enables him to enjoy his bath all the more.

3. Do not stand still in the water to talk, but keep moving after entering the water, and if tired from swimming go and dress immediately. Ladies, particularly, should remove their wet clothes promptly.

4. Time. More bathers are, perhaps, injured by remaining in the water too long than by any other cause. By overtaxing the physical energies reaction is rendered slow and imperfect. Half an hour is the maximum time the most vigorous should remain in the water; while for many, ten minutes is quite long enough.

5. Be careful to wipe and rub the skin entirely dry before dressing; the reaction will be more speedy and the bath more invigorating. It is advised that women and girls with long hair wear rubber or oil-skin caps in the swimming tank.

6. After having dressed, do not lounge around the bath to look at others in the water, but take a brisk walk in the open air. A little exercise before bathing and a good deal after bathing is very essential.

7. The Cramp. Persons who plunge into the water when they are heated by exercise, or who remain in the water too long, or who exhaust themselves by violent exertion, that is to say, who violate the above simple rules, are the most subject to the cramp. If the swimmer be seized with the cramp in the lower extremities,

THE ANNALS OF
Hygiene and of Medicine

Vol. 12 PHILADELPHIA No. 11

COMMUNICATIONS.

THE COUNTRY SLAUGHTER-HOUSE AS A FACTOR IN THE SPREAD OF DISEASE.*

CH. WARDELL STILES,† M. D., PH. D., WASHINGTON, D. C.

SPEAKING generally, the places for slaughtering animals for food may be divided into large *abattoirs* and local *slaughter-houses*. The former are usually located in cities, and operated in connection with packing houses. The latter are used chiefly by the meat dealers of the country towns, and the animals slaughtered at these places are generally if not always, for local consumption. In this articls it is intended to discuss only the local slaughter-houses in their relation to diseases, and the criticisms here made do not apply to the large abattoirs which prepare meat for export and interstate trade in accordance with the system of Government inspection now in force.

It is impossible to ascertain from the State authorities the total number of places of slaughtering in either of the States discussed, so that no definite figures can be given covering the entire area visited, but a certain number of representative towns will be considered, in which the data were obtained by personal investigation.

---

* By permission from the Year Book of the United States Department of Agriculture for 1896.

† *Zoologist of the Bureau of Animal Industry*, U. S. Dept. of Agriculture.

The butchers of the counties visited supply themselves with meat from the following sources.

1. Some meat dealers, especially those of the cities and larger towns, obtain all their meat from the large packing houses and do not slaughtering themselves; this class does not, therefore, enter into the field of this article.

2. In a few cases meat men were found who did their own killing, but who had no regular place for slaughter. These men would drive from farm to farm and buy one or two animals, which they killed at the place of purchase, throwing the offal of the slaughtered animals to the farmers' hogs. They would take the dressed or partly dressed carcass to their meat shop and place it on the block.

3. In a number of cases small dealers were found who had no slaughter-houses of their own, but who did all their killing at slaughter-houses controlled by other local butchers.

4. In two towns at least it was learned that farmers occasionally slaughtered their own animals and brought them to town dressed or partly dressed, selling them in halves or quarters to the local butchers or to families, hotels, restaurants, etc. The farmers were in the habit of feeding the offal of the slaughtered animals to their hogs.

5. The majority of the local dealers in small towns own or rent small slaughter-houses. In nearly all cases these houses are located on or just beyond the town limits. They are frame structures, generally of one room, built directly on the ground or raised several feet, and surrounded by a small yard, or in many cases situated in a large field.

In perhaps majority of cases the butchers controlled a small piece of land, and, as a rule, hogs were kept on the premises to eat the offal. In many instances the houses were located on the banks of rivers or creeks into which the premises drained. Frequently the offal was thrown down an embankment toward the water and left there to be eaten by hogs and rats or to decay and drain into the stream. In some cases the slaughter-houses were located on farms. These farms were either owned by the butchers or a farmer would give to the butcher, for his slaughter-house, the use of a piece of ground on the corner of his premises in return for the use of the offal as food for his hogs.

A very important matter from the standpoint of public hygiene is that in case a town was provided with more than one slaughter-house, the houses were rarely segregated, but were scattered north, south, east and west, each butcher apparently trying to place his house in such a position as to prevent any undue amount of curiosity on the part of his competitors as to the character of his stock.

The plan of inspection followed was first to call on the local board of health and the mayor of the town, in order to obtain as much information as possible regarding the location of the houses, character of the butcher, etc. A visit was then made to the dealer, and permission to visit his slaughter-house was requested; at the same time information was requested concerning the number of animals used, the originand disposition of the stock, etc. In these notes any statements not made from personal observation are given upon the authority of the mayor, the local board of health, or the butchers themselves. As a rule, permission to visit the grounds was easily obtained and all questions were cheerfully answered. In some isolated cases, however, permission to enter the premises was refused by the butcher, and these places were then inspected only from a distance. It is needless to state that these premises were found in a poor condition.

Cases, taken at random from notes covering nineteen towns in one State and ten towns in another, cited as fair examples of the places visited. Some places were found in good condition; some in a condition that was a disgrace both to their proprietors and to the communities that tolerated their existence.

The first matter to notice in connection with this subject is that every slaughter-house is from the very nature of things a center of disease, and naturally the poorer the condition of the premises the more dangerous they are. These facts will appear clear if one considers what takes place at one of these houses. Even if only a few animals are slaughtered each week, the total number may amount to several hundred during the year. Some of the animals are surely diseased. At least one of the hogs has trichinosis, and when the offal of this trichinous hog is fed to hogs which are raised upon the grounds, the latter cannot escape infection with trichinæ. But that is not all. The slaughter-houses are often overrun with rats; the rats feed on the offal, and when feeding on the offal of a trichinous hog they likewise cannot escape infection with trichinæ. As a matter of fact, the rats captured at slaughter-houses, meat shops and rendering establishments, were found to be infected in a much greater proportion than rats taken from other sources, as is shown by the following table:

SUMMARY OF TRICHINOSIS IN RATS.

RATS	Number examined	Number infected	Number uninfected	Percentage infected
Group 1:				
From slaughter-houses	63	35	28	55.55
From meat shops	7	4	3	57.14
From packing-houses	2	. . .	2	. . . .
Total	72	39	33	54.17
Group 2:				
From corn-cribs	11	1	10	9.09
From barns	61	. . .	61	. . . .
From feed stores	1	. . .	1	. . . .
From hotel	1	. . .	1	. . . .
From unknown source	1	1	. . .	100.00
Total	75	2	73	2.66
Grand total	147	41	106	27.89

Rats act as direct transmitters of trichinosis to hogs. According to the above statistics, if a hog kept at a slaughter-house eats a rat, the chances are fifty-five in a hundred that it will become infected with the disease. Now, suppose that a slaughter-house is burned or abandoned, as was frequently found to be the case; the rats inhabiting the premises naturally wander to the neighboring farms or to the corn-cribs in order to obtain food, and of every hundred rats that leave the slaughter-house grounds fifty-five carry with them the disease known as trichinosis. This disease they transmit to hogs, if eaten by them.

It is frequently denied that hog will eat rats, but such denial is erroneous. Sometimes hogs have refused rats when offered to them; but that hogs do and will eat rats has been proved by experiment.

In the segregation of slaughter-houses care should be taken to destroy the rats in all the houses which are dererted in order to prevent their wandering to neighboring farms.

From this it will be seen that every slaughter-house where hogs are killed forms a center for the spread of trichinosis to the neighboring farms, and when the offal is fed to other hogs it cannot be expected that the latter will escape trichinosis any more than the rats. Offal-fed hogs, are, therefore, liable to be infected to an extent varying from ten to one hundred per cent., and this custom of feeding hogs at country slaughter-houses unquestionably is mainly responsible for the spread of trichinosis among the hogs of the two States visited. When we recall that, as was ascertained by inquiry, from one-fourth of 1 per cent. to nearly 4 per cent. of all the hogs shipped from certain localities are offal-fed, we need not be at all surprised to find that 1 to 2 per cent. of all the hogs examined at the large abattoirs are trichinosis. Furthermore, since so much offal-fed pork is placed upon the local mraket in country towns, we need not be at all surprised should we find that a quarter or a half of all the pork sold by many country butchers is infected with trichinæ.

But trichinosis is not the only disease which the country slaughter-house spreads by offal feeding. It is well known that tuberculosis occurs in cattle and hogs. Now, if one or two hundred of these animals are killed at a country slaughter-house during the year, it may safely be assumed that one or more of them are tuberculous. Feeding the offal of these tuberculous animals to hogs will transmit the disease to those hogs, and these animals when used as food may in turn transmit tuberculosis to human beings.

The country slaughter-house is also the center of infection for a number of animal parasites which are injurious to live stock or, in some cases, even to man, and which are spread by means of dogs. Anyone who has visited one of these places will have noticed that the dogs soon discover the premises as a good place to obtain food. While eating the discarded organs they infect themselves with several kinds of parasites, of which the following are the more important:

The *Echinococcus hydatid* is found in the liver, lungs, and other organs of cattle, sheep, hogs and certain other animals. It varies in size from a small object as large as a hazel-nut or smaller to a bladder the size of a child's head. This bladder contains numerous tapeworm heads, and when eaten by a dog each head produces a small tapeworm. The eggs of this tapeworm are in turn transmitted to the various domesticated animals and man, and give rise to hydatids.

This parasite seems to be on the increase in this country. The disease it causes can occasionally be cured, but in man it is said to be fatal in five years in about fifty per cent. of the cases. It can, however, be almost completely eradicated if slaughter-houses are properly cared for.

The Thin-necked bladderworm is found in the body cavity, in the omentum, etc., of cattle, sheep and hogs, and is quite common in some localities. It develops into the Marginate tapeworm when eaten by dogs. The eggs of the marginate tapeworm are then scattered by the dogs on farms, in the road, etc., and infect cattle, sheep, and hogs with the bladder worm. It occasionally causes the death of young animals, as the bladder worm cannot be reached by medicines.

The Gid bladder worm is found in the brain of sheep, and occasionally in other animals, but fortunately it is exceedingly rare, if present at all, in this country. When eaten by dogs, it develops into a tape-worm which produces numerous eggs. The dogs scatter these eggs on farms, sheep become infected with them, and contract the disease of "gid" or "turnsick."

The Tongue worm is found incysed in the viscera of cattle, sheep, and other animals. It is about a quarter of an inch long, and when eaten by dogs grows to be two to five inches long, inhabits the nasal cavities, and produces numerous eggs, which are transmissable to man as well as to the domesticated animals.

It is needless to enumerate all the diseases which miget center at a slaughter-house, but two more maladies, i. e., hog cholera and swine plague, demand attention. It has already been noticed that many slaughter-houses drain directly into brooks and creeks. If hogs suffering from hog cholera or swine plague are killed and the entrails thrown into a yard draining into a creek, it inevitably follows that the creek becomes contaminated and the disease then spreads to farms lower down the creek, and an outbreak of the disease will follow. The same remarks apply to wire worm disease in sheep.

From the foregoing discussion, the writer is forced to adopt the view that every slaughter-house is a center from which disease may spread, and that the chief factors concerned in the spread of these diseases are First, offal feeding, Second, drainage, Third, rats, and Fourth, dogs.

There are two methods of meeting and lessening the dangers with which slaughter-houses threaten the farmer :

1. Since every slaughter-house is a separate center of disease, it follows that a reduction in a number or a segregation of slaugter-houses will reduce the number of places from which disease will spread.

2. Since offal feeding, drainage, rats, and dogs are important factors concerned in spreading the diseases, it follows that we can control the spread of these diseases by controlling these factors.

An exact ratio of the number of inhabitants to each slaughter-house can not be deduced, as the neighboring farmers naturally draw some of their supplies from the local markets. Taking, however, the number of inhabitants in towns and the number of slaughter-houses, localities can be found where the proportion varies between one slaughter-house to seventy-two inhabitants and one slaughter-house to sixteen hundred inhabitants. In twenty-nine towns of the two States visited sixty-nine local slaughter-houses were found. Sixteen of the towns had two slaughter-houses each, eight had three each, two had four each, and one had five.

From the above figures it will be seen that twenty-nine localities furnish sixty-nine disease centers for the surrounding country. It is also evident that if the slaughter-houses were so segregated that all the butchers of each town were obliged to do all their killing at a common slaughter-house, we should have forty places less from which disease could spread to the farms surrounding these twenty-nine towns.

The first and most important proposition, therefore, to lessen the danger due to the country slaughter-house is to reduce the number of places at which slaughtering is allowed, compelling all the butchers of a given town to slaughter at the same place.

This suggestion will naturally not meet with the approval of all the butchers. The objection will be made that they have money invested in slaughter-houses and that any change will mean financial loss to them. To this the reply is that all or nearly all the country slaughter-houses are frame buildings, which are not of much value; they are cheaply built, poorly arranged, etc., and represent an infinitely smaller investment than the money invested in stock by neighboring farmers; and the temporary loss to be sustained by the butcher will be infinitely less than the loss sustained in the course of time by the neighboring farmers and by the community. Further, these numerous local slaughter-houses are menaces to public health, and under these circumstances a small financial loss to a few individuals cannot be taken into consideration.

Another objection that will be made by the butcher is that while the segregation of the slaughter-houses would reduce the number of centers of infection, it would not reduce the amount of infection in a given district. To this the reply is that the objection is more apparent than real, since a given amount of infection in a restricted area is more easily controlled than the same amount of infection scattered over a larger area and in different localities.

Objection will also be made that this segregation of the slaughte-houses is an innovation, an experiment, a scientific theory which is not practicable. The reply to this is, that while it is an innovation in this country, it has been tested and found satisfactory in other countries, where practical experience has borne out scientific theory and where the plan has been shown to be entirely feasible.

Objection may be raised that one butcher does not care to be subjected to having his business open to the gaze of other butchers. This objection answers itself. There undoubtedly are butchers who would object to having other butchers see the class of stock they kill or raise, and the sooner the health authorities exercise some control over these dealers the better.

In connection with the segregation of slaughter-houses it is suggested that a slaughter-house could be built by a stock company or by the municipality and stalls let to the butchers, or the butchers could build a common house for killing, or each butcher could move or build within a restricted area to be given up to slaughter-houses.

Passing now to the most potent factors in the transmission and spread of disease from country slaughter-houses, let us see how these factors may best be controlled.

DISPOSITION OF OFFAL.

The author unqualifiedly condemns the feeding of the uncooked offal of slaughtered hogs (and also of uncooked swill containing scraps of pork) to other hogs, on the general ground that this custom is a most potent factor in spreading disease, and also on the ground that butchers almost universally admit that offal-fed hogs are inferior to corn-fed hogs. It is here also specifically maintained that offal feeding at the small country slaughter-houses is the most important factor in the spread of trichinosis among our Western hogs, since the conditions found are such that undoubtedly from 25 to 100 per cent. of the offal-fed hogs at these houses are infected with trichinæ. This custom unquestionably also plays an important role in the spread of tuberculosis among hogs. It is accordingly urged that the offal of hogs be disposed of in some other way. A dealer who kills but two or three hogs per week cannot, of course, afford to render the offal, but if all the butchers of a given town or county, or of two or three neighboring towns, kill at the same place, the proportionate expense of rendering will be reduced.

There is no valid sanitary objection to feeding the offal of healthy cattle and sheep to hogs, but there are decided objections to feeding this offal in case the animals are diseased. In order to be on the safe side, therefore, it is urged that the custom of offal feeding be entirely abolished.

In large abattoirs no offal is fed, so that the claim some Europeans have made that offal feeding at Chicago and other large places spreads disease among our stock is entirely groundless.

DRAINAGE.

If the offal is rendered, the problem of the drainage of slaughter-houses will be greatly simplified, since the greatest danger in the drainage is from the decaying offal. The latter being disposed of, the drainage system will simply have to take care of the unused blood, the water used for washing, and the rain.

Regarding the water supply, it may be stated that this is very poor in the average country slaughter-house, but a segregation of the houses would enable the expense of a windmill or other supply power to be divided among several parties, and thus reduced, while the water supply will be increased. The drainage of the killing floors and yards is naturally quite rich, containing considerable manure, blood, etc. To drain this material directly into small creeks and rivers is somewhat dangerous for neighboring farms. As a safe method of disposal, the use of large covered cesspools situated some distance from the water supply is suggested. The cleanings from these cesspools would form excellent fertilizer, but should not be used fresh on any ground to which cattle, sheep, or hogs have access, or upon grounds planted with vegetables which are eaten uncooked. With comparatively little expense the blood could be immediately prepared as fertilizer.

THE DESTRUCTION OF RATS.

How to destroy the rats around a slaughter-house is a serious problem. The use of "Rough on Rats" in these places is to be condemned, as it causes the rats to wander, thus spreading disease. It is far better that diseased rats should remain on the premises than that they should wander to farms. "Rat runs" by use of ferrets or by pouring hot water into the rat holes, the presence of "ratters," and the systematic use of rat traps and rat falls will do much toward destroying these pests. Although there are slaughter-houses in the two Stated visited that are literally honey-combed by rats, there are others where rats are very scarce.

A most excellent "rat fall" may be made of a strong barrel, about half full of water. The cover should be placed on a pivot and well baited. Huudreds of rats may be caught with this device. It is important to dispose of the bodies of these rats so that they cannot be devoured by other rats or by hogs.

DOGS.

The butcher who allows dogs access to the slaughter-house or its grounds is directly responsible for the spread of certain animal parasites. Dogs should be absolutely excluded. The presence of cats is not attended with the same danger as that of dogs, but it is difficult to maintain cats at slaughter-houses for any length of time withont feeding them on milk or other food besides meat.

The question of raising live stock on slaughter-house premises naturally arises in connection with the question of offal feeding. The opinion upon this question needs no defense to anyone who will consider all the conditions involved. The writer is unqualifiedly opposed to the raising of any kind of stock upon premises occupied by slaughter-houses, and condemns this custom, so prevalent in some districts, as dangerous to the public health, in that it inevitably results in breeding disease in animals used for food. It is accordingly recommended that local or State regulations be made to the effect that when any stock animal, more particularly the hog, has once entered the premises of a slaughter-house, it should not be allowed to leave those premises alive, and that it must be slaughtered within a period not exceeding two weeks.

Such a regulation would have the two-fold effect of preventing the shipment of slaughter-house hogs to abattoirs, and the limit of two weeks would prevent these animals from reaching a stage in the disease known as trichinosis where the malady is transmissible to man, in case healthy hogs became infected after entering the premises.

Country slaughter-houses are almost invariably built of wood. The use of some other building material, such as brick or stone, is advised, as stone is more easily cleaned and holds odors less tenaciously than wood. The flooring and the pavement of the entire yard should, if possible, be of asphalt.

SANITARY POLICE.

The judging of meats involves a knowledge of disease which cannot be assumed or expected to be possessed by butchers. Placing diseased meat on the block, unintentionally no less than intentionally, is dangerous to the health of the consumers. For the protection of both the butcher and his patrons, therefore, all meat should be inspected at the slaughter house by someone who is trained in meat inspection. As a rule, a veterinarian is best fitied for this work. Every local board of health should have a competent veterinarian among its members, and the local meat inspection would very naturally be one of his duties. It seems best, however, that the State veterinarian should have control over the slaughter-houses, and the writer would even go so far as to advise the appointment of an assistant State veterinarian whose sole or, at least, most important duty should be a sanitary supervision of slaughter-houses.

There are several reasons for suggesting that the slaughter-houses be placed under the State board rather than under the local boards. In the first place, the majority of slaughter-houses are located a short distance beyond corporation limits, and hence beyond the control of the local boards. If, however, these slaughter-houses are licensed by the State boards, satisfactory regulations can be imposed. Furthermore, the sanitary supervision of the grounds can best be performed by someone who is entirely independent of local practice, and the veterinarian who has this matter in charge should give up his entire time to it. A small country town cannot, of course, keep a man for such a duty, but a competent State official could be kept busy.

As a rule, there is little complaint against slaughter-houses in case the odor arising from them is not especially offensive. When complaint is made, the butcher sometimes cleans up the premises a little and the matter is dropped. From the above discussion, however, it must be evident that the odor arising from a slaughter-house is insignificant when compared with the sanitary side of the question. It must also be evident that little will be done to better the existing conditions unless those directly affected take some decided action in the matter. The classes most affected are the farmer and the townspeople. The farmer suffers loss in his stock; the townspeople suffer loss in health. The townspeople can protect themselves against the diseases by thoroughly cooking their meats, and their interest in the matter then ends. The farmers must protect themselves in some other way, and the most natural way is to demand a better regulation of the country slaughter houses. Let the farmer, therefore, take the initiative, and for his own protection let him demand a State control of these premises.

SUMMARY.

1. A well-regulated system of slaughter-houses is as necessary to the public health as is a well-regulated system of schools to the public education.

2. Every slaughter-house is a center of disease for the surrounding country, spreading trichinosis, echinococcus disease, gid, wireworm, and other troubles caused by animal parasites, and tuberculosis, hog cholera, swine plague, and other bacterial diseases.

3. The important factors concerned in spreading these diseases are offal feeding, drainage, rats and dogs.

4. These diseases may be gradually held in check and in some cases entirely eradicated in two ways: First, by a reduction in the number of premises on which slaughtering is allowed, on which account it is urged as all important that there be a segregation of the slaughter-houses, so that all the butchers of any given town will be compelled to do all their killing in a common inclosed and restricted area. In abandoning slaughter-houses, care should be taken to destroy the rats, in order to prevent the spread of infection. Second, by regulating the factors concerned in spreading the diseases; (*a*) offal feeding should be abolished; (*b*) drainage should be improved; (*c*) rats should be destroyed; and (*d*) dogs should be excluded from slaughter-houses.

5. A licensing of slaughter houses by the State boards of health and the employment of an assistant State veterinarian, whose sole or most important duty shall be a sanitary supervision of all places where animals are slaughtered for food, are necessary.

6. The appointment on every local board of health of a competent veterinarian, whose duty it shall be to control the class of meat placed upon the block, is urged. All meats should be inspected at the time of slaughter, thus securing for the local consumer the same guaranty that the National Government provides for the foreign consumer and for inter-state trade.

8. The prohibiting of the raising of any kind of stock within the premises of slaughter-houses is advised, as are also State regulations to the effect that when a stock animal (horse, of course, excepted) once enters the premises of a slaughter-house it must never be allowed to leave those grounds alive, but must be slaughtered within two weeks' time.

8. It is advisable to use more substantial building material in the construction of slaughter-houses.

9. The country slaughter-house is more injurious to the farmer than to other classes, as he is less able to meet the dangers involved, and on this account he is urged to take the initiative in calling for a better regulation of places of slaughter.

10. When a farmer kills stock for his own use, he should burn or bury the offal, or cook it in case he feeds it to hogs.

HAY FEVER.*

By EDMUND W. HOLMES, M.D., Philadelphia.

Synonyms:—Hay Fever, Summer Fever, Rag Weed Fever, Snow Fever, Hay Asthma, Rye Asthma, Pollen Asthma, Pollen Poisoning, Pollen Catarrh, Bostock's Catarrh, Catarrhus Æstivus, Summer Catarrh, Summer Catarrh from Idiosyncrasy, Typical Early Summer Catarrh, Autumnal Catarrh, Summer Bronchitis, Rose Cold, Peach Cold, Harvest Cold, June Cold, July Cold.

In view of the limitations of time and of your amiable endurance I will plunge at once into my subject, especially as thereby both you and I will be spared a lengthy disquisition upon Meckel's ganglion, the fifth pair of nerves and their relations to the pneumogastrics, which I should feel constrained to indulge in, were I writing for publication in to-morrow's daily press.

Hay fever was first clearly recognized by Dr. John Bostock, in 1819, himself a sufferer, and by Drs. Gordon and Elliottson a year or two afterward. I find, however, that it was fashionable even at that time to regard the disease as of recent origin; yet Elliottson mentions one patient who was sixty-six years old who had it from his seventh year, and another since 1798, and a third for many years. C. L. Parry, of London, records a case in 1809, and another in 1811. John Floyer, London, 1698, noticed that certain attacks of asthma were longer and sharper in summer than in winter, and in Good's "Study of Medicine," there is a reference to a case related by Timaeus, 1667, of an attack caused by the odor of roses and ipecac. Dr. Bostock found that hay fever was known to the laity, but not to the profession; nevertheless, their own King, George IV., had the disease.

A part of the mysterious origin must be set down to the indifference of the sufferers, who from year to year have forgotten their periodical affection and failed to consult their physicians. Of similar cause is the groundwork of the assertion that it affects only the wealthy. This is simply because with this class there is a higher intelligence and closer attention to ailments, and the fact that once having discerned the actual condition they, in many instances, take professional advice, or go to a place of refuge, thus drawing notice to themselves, all of which things are denied to the lower (poorer) classes. It is said that there are some 200,000 sufferers in the United States, at least within the range of observation of the Hay Fever Association, which, meeting annually at Bethlehem, N. H., may be held to represent the more stable and well to do. From my own experience and observation I am convinced there are many of our working people who suffer from this affection who do not even now, to this day, recognize the disease.

---

* Read before the Philadelphia County Medical Society, October 16, 1897.

The salient trait which most attracts the attention of the student of hay fever is its annual recurrence. This is grafted on its very nature, becomes the central point of diagnosis, the chief characteristic, and to the elucidation of this all existing theories tend. It is, however, not sufficiently recognized that we come here upon a problem which we are totally unable to solve, and we can by no means be wiser on this than we are in the discussion of other conditions.

The reasons of the rhythmic measures of the most ordinary of every-day events are not and cannot be understood. Their unfailing occurrence at the appointed time is recognized, but the determination thereof then, rather than at some other period, cannot be explained. This is true not only as to the world around us, but as to ourselves. Health and disease afford abundant illustration. The fixation of the number of heart-beats, or of the respiratory movements, of the cycle of menstruation, or of the period of gestation, is alike as indeterminable as the cause of the mutations of the typhoid temperature, of the recurrence of hectic, of the regularity of the return of the types of argue upon the second or third or fourth day, or of hay fever upon its annual date. We are bound to accept these as fixed laws, but further than this we can hardly go. As the rhythm of physiologic effects is under the control of the central nerve ganglia, and as intermittency is a peculiarly marked feature of so-called nervous disorders, so far the annual return and its variations are evidence of the neurotic origin of hay fever.

The pollen theory rests upon its more obvious explanation of this difficulty. The investigations of Dr. Blackley, of Manchester, published in 1873, from observations extending over more than ten years, are remarkable for their originality and ingenuity.

He experimented upon himself and others with various agencies to ascertain the origin of the malady. He decided against the efficiency of ozone, light, heat, dust, benzoic acid, coumarin, the odoriferous principle of hay, odors of various flowering-plants, as violets, roses, etc., and against various microscopic fungi. He then tested the effect of the pollen of seventy-four kinds of plants and grasses. Within thirty minutes the rye caused coryza, occlusion of the nostrils, and sneezing, lasting for six and eight hours. The apparatus for testing the quantity of pollen in air consisted of a dise of glass, with a vane to keep the glass continually facing to windward, and upon this was placed a microscopic slide one centimeter in diameter, coated with glycerin, by which the particles floating in the atmosphere were caught by the slide. During the latter part of May but few pollen grains were found. About June 1st they began to increase and his hay fever also. The variation in the amount of pollen in the atmosphere corresponded with the degree of severity of the attack. Unfortunately, in accordance with this, it has been found necessary to specify numerous individual irritants.

Emanations from hay, Indian corn, bean flowers, roses, lilies, elder trees in bloom, and various other blossoms; from nettles, ambrosia artemesiæ folia, ambrosia hertifolia, golden rod, and from various fruits and vegetables, have been cited as causes of the disease; but I am not aware that any specialized action has been proved; all alike act (if at all) by mechanical irritation. If we define a cause as a "constantly precedent," and an effect as a "constantly subsequent" event, the need of an array of causes is most embarrassing to the immobility of the theory, but volumes for its elasticity. A theory that gave thirty or forty causes for cholera, and claimed that it depended on the "idiosyncrasy of the individual," which one evoked the disease in a given instance, would not be very tenable.

The type of the disease seems to vary in different countries, though in their essential characters the same. In England patients are said to be at their worst in June and July, in this country during August and September. In the United States some attacked in May are well by July 1st; some attacked in July are well by August 15th; some attacked in August are well by November 1st; some unfortunates suffer throughout the whole period from May to November—"the missing link."

Those suffering from the June type may occasionally have a September attack, or it may be changed into a permanent August visitation. The August type may disappear in a certain individual and reappear as a June cold, A parent having the June cold may transmit to his child July or August cold, or all three, or of several children each may have a different type, and so, *mutatis mutandis,* of the others. Any or all of these forms may accrue to the progeny of asthmatic parents. It seems, therefore, as if, wherever occurring it were a manifestation of one and the same disease.

We are informed by a well-known and competent authority that the limited variations of flowering out-door plants would be, in Pennsylvania, to the extent of and not exceeding three weeks. Their punctuality to the self-same date yearly is an obvious absurdity, depending as they do upon the variations of the seasons. As thus the date of the flowering of plants varies within certain limits, the alleged appearance of the disease upon a certain day and hour is unaccounted for. While individuals suffer variously in May, June and August, and some from May till October (connecting links between all these types), and in course of years change from one type to another, and even occasionally become well without treatment, these facts prove the immutability of the blossoming date, or, more rationally, its limited variation, the change from the control of the cause is incomprehensible.

Moreover, even as a mere irritant, as it affects comparatively few, it must act upon a condition which is pre-existent, which is, therefore, independent of and predominates it, else would the cause, pollen, produce it universally.

Under the name of hay fever, then, is included a group of symptoms having for their chief and essential characteristic their periodic appearance, classed under a variety of names according to their time of appearance or fancied cause—June cold, July cold, peach cold, rose cold, autumnal cattarrh, etc.

The symptoms of the disease are a sense of lassitude, in some reaching great prostration; irritation of conjunctival, nasal, bronchial and other mucous membranes, adjacent and continuous, extending at times even to the digestive tract, and manifested by excessive secretion from the parts affected; cough; asthma; well-marked injection and swelling of the tissues; and fearful and wonderful paroxysms of sneezing. This sneezing is not ordinary. I have frequently on the street been compelled to seize some friendly support, blinded and staggered by the violent sternutations. On entering a room I have had to bury my face in my nankerchief and sneeze it out, then, recovering myself as best I might, with face like the rising sun, brace myself for work. These symptoms are not all of equal severity in every case. One patient may be troubled mainly with coryza, another mainly with asthma, while a third may go through a course, at first of catarrhal symptoms affecting the naso-pharynx, followed later by asthma. I think it will be found that, other things being equal, the younger the patient, the greater is the predominance of the catarrhal, while in older persons, and in the more confirmed cases, the greater is the suffering from the bronchial and asthmatic symptoms.

Bosworth considers the pathognomic conditions to be the long continuance of the paroxysms of sneezing ; then the watery, serious discharge, with the bluish gray "tinge of the mucosa verging on opalescence, the surface of the membrane being covered with slightly viscid, watery serum, which gives it glassy, semi-translucent aspect," the hyperemia being "confined entirely to the large venous sinuses, the capillaries of the mucous membrane proper not being congested." I am not aware that such sharply diagnosticating conditions have been seen by any one else, and it seems as if they were observed through the spectacles of his theory of nasal reflexes described in one of his preceding chapters.

Upon examination of the nasal cavities we find, upon the lower border of the turbinated bones, that the mucous membrane is disposed in thick loose folds, owing to the peculiar arrangement of the net of arteries and veins constituting "cavernous tissues," its characteristic being that it may suddenly be gorged with blood resulting in extreme distension, and almost as suddenly be collapsed and relieved. This cavernous tissue is especially thick over the inferior turbinated bone and lower and posterior part of the median septum, as well as upon the lower edge of the middle turbinated bone. This distension in acute condition quickly subsides, but in cases of chronic disease the mucous membrane is markedly thickened, the blood-vessels enlarged and tortuous, and the passages closed to a greater or less extent.

It is claimed that there are three reflex areas peculiarly impressionable, one at each extremity of the inferior turbinated bone and one (not so well proved) higher up in the vestibule (or anterior portion of each nasal cavity), which, when irritated either by disease or "*ab extra* irritation," transmit the impression to the nerve centres, and by them is imparted to distant organs. So that, for example, a tumor pressing upon the posterior extremity of the inferior turbinated bone might cause violent cough and spasm of the bronchial tubes, which disappear on removal of the growth. It is said that all parts of the cavernous tissue are not especially susceptible to irritation ; the sensitive areas are inferior turbinate (the posterior and middle reflex areas) and the portion of septum immediately opposite, being particularly related to cough and asthma ; the anterior, in vestibule, to sneezing, lachrymation and other catarrhal symptoms. We might compare these with certain other cases of reflex asthma (not hay fever) benefited by removal of the tonsils.

It is asserted, in view of these facts, that in hay fever the cavernous tissues become engorged and fill up the passages, and the several areas being impinged upon, the various characteristic phenomena follow.

Of the nature of the peculiar irritant, pollen, we can say but little, excepting that the microscopic appearance of the horns and briars thereon, in the mind of the theorist, amply support the hypothesis.

The theories of hay fever may be, then, thus summarized :

1. It may be due to chronic nassal catarrh, upon which the exciting cause acts with effect, with its dependent hyperesthesia, congestion and obstruction, the centric nervous system being secondary to the hyperesthetic condition of the nostrils. The extremists even deny its existence as a separate entity, regarding hay fever merely as a condition—a form of ordinary catarrh.

2. It may be due to functional activity or paresis of the governing (vaso-motor) centers, with hyper-excitability of the erectile (cavernous) tissues, in response to peripheral irritation. The erethrism of the cavernous tissue, though secondary to the centric condition, is the immediately essential part, the most serious symptoms coinciding with the swelling of this tissue, and being dissipated with the subsidence of the same—a vaso-motor disease.

3. It may be due to an organic alteration of the nerve fibers terminating in the nasal region, and chiefly in the three reflex areas.

4. It may be one of the multiform manifestations of the uric acid diathesis.

In all these theories there is more or less firm belief in the agency of the pollen, either in inducing the disease or, at least, the paroxysms.

A summary of the local pathology would then be:

The symptoms of hay fever are due to the obstruction of the nasal passages, the result of chronic nasal disease. Hereby is set up a special and extraordinary irritability of the terminal nerve fibers, perhaps with organic alteration thereof, and resultant excessive excitability of the nasal and other mucous membranes and of the cavernous tsssues, together with hyperesthesia of the nerve centers, the degree of irritability varying with different individuals and under the stimulus of certain special irritants. As a result of this organic alteration and tumefaction the reflex sensitive areas are directly involved or impinged upon, and the reflex phenomena in varying proportions of cough, asthma, sneezing, lachrymation and a congestion of tissues, contiguous and continuous, with resultant general prostration, ensue. The greater the local congestion and inflammation the more constant the reflected symptoms. Certain observers declare that in all cases of hay fever there is chronic nasal disease which is the original starting point; but other deny this maintaining that there may be only hyperesthesia, especially of the reflex areas, without further evident disease.

It is exceedingly unfortunate for the strict "localists" that all cases of hypertrophy of the nasal mucosa are not attended with hay fever, nor all cases of hay fever associated with observable organic lesions; that the excessive hyper-sensibility of the membrane in hay fever is not accounted for, nor its periodicity explained; and that many of those treated strictly according to these methods are not cured. I note an example, most carefully reported, in which with cold snare and galvano-cautery, all obstructions were removed, and areas rendered anesthetic, so that a probe no longer excited reflex symptoms, yet the patient suffered from hay fever with scarcely diminished intensity.

Further, it is not seen, perhaps, that there is a possibility of at least a degree of the conditions described being the result (especially in acute hyperemias) and not the cause, the peripheral susceptibility being an outward expression of an inward state.

We are grappling with a difficult problem, because we have to deal with a mucous membrane, one of the most complex structures, containing fibrous, muscular, nervous, vascular and secreting tissues, and we meet with the same rebelliousness to treatment here as in the vaginal and uterine mucosa, to the refractory and lasting nature of which diseases the huge pocketbooks of the specialists are a bulging testimonial. Again, if a patient had typhoid fever with enteric ulcer alone, and the incautious eating of a pancake resulted in diarrhœa or perforation, we would hardly call the pancake the cause of typhoid fever. The cause must be antecedent to the effect, and to my mind there must be some morbid condition, the nature of which we do not understand, which is at the bottom of this malady. No specific action of the pollen having been shown, it must be concluded that this acts merely as an irritant, an effect shared in common with any fine dust in sufficient quantity.

The confusion of theories has arisen from the fact that the paroxysms have been mistaken for the whole disease. I am inclined to believe that the effects of the different varieties of pollen are mental rather than physical, and that the only activity thereof is its possible presence as dust. Further, I am inclined to think this differentiation to be rare among hay fever patients. I believe the disease to be in great part a neurosis, originating in local disease in the naso-pharynx, the characteristic manifestation being in part direct, the result of central nervous modifications, and in part reflex, from the action of various mechanical irritants, aided by local and constitutional factors when they exist, and by seasonable and climatic influences, the periodic and peripheric susceptibility being in particular expressions of certain impressions.

So long as the cause was held to be an external one there was little encouragement for treatment and but little progress was made. I am hopeful, however, that with a more comprehensive study of the nasal tissues, and particularly of the nerve supply and nerve endings, we will learn to master this annoying malady. Our treatment should be directed in two channels:

I. THE CENTRIC NERVOUS MODIFICATIONS.

The internal remedies that yield the best results are quinine in five-grain doses up to the verge of cinchonism, zinc valerianate, extract of belladonna, tincture of opium in five-drop doses, and phenacetine. For the dyspnea, potassium iodide, ten grains every other night, seems to give better results than the same amount in divided doses. The Chapman ice-bag, which is merely a narrow rubber bag, eighteen to twenty-four inches long, filled with cracked ice and applied along the spine for from fifteen to sixty minutes twice daily, has in some cases acted very happily in modifying the symptoms. Care should be taken to make the earlier applications only from ten to fifteen minutes in duration.

Under this heading would come removal to a so-called exempt region. The degree of immunity varies with the individual, and sometimes with the patients in the same locality in different years. There is much more encouragement, the tonicity of a suitable refuge is more than a temporary benefit, as in a certain number of cases the period of the disease is shortened thereby, so that the length of the necessary isolation is much diminished.

II. THE PERIPHERAL SENSIBILITY.

The local applications may consist of extract of belladonna in the form of a bougie; glycerine and carbolic acid, 1 to 30; or coating the surfaces with vaselin—though to some both glycerine and vaseline act as irritants—and applying a 4 per cent. solution of cocaine.

This last drug must be applied thoroughly to be of service, and in fact a test experiment may be made which will give an inkling as to the source of the symptoms. If cocaine be applied thoroughly to the nasal cavities alone of a patient with a swollen face, injected conjunctivæ, excessive lachrymation, sneezing and serous discharge from the nose, all these symptoms will be greatly ameliorated and held in abeyance as long as cocaine anæsthesia is kept up. Of course, the asthmatic symptoms cannot be thus relieved. Unfortunately, as we well know, the constitutional effect of cocaine, the nausea, dizziness and subsequent depression, are so disagreeable as to prohibit the excessive use of the drug necessary to keep up that effect.

I have found a two per cent. solution of cocaine phenate with boric acid solution (gr. v to one ounce) sprayed into the nose at intervals, of more use than anything else. The carbolate aids the anæsthetic effect and prevents too rapid absorption of the drug.

Of the local treatment by cauterization or removal of hypertrophy, I have very little to say. The means employed are various: the wire loop or snare, or the use of caustics, such as chromic, nitric, or glacial acetic acids, or the galvano-cautery—the severity of the operations ranging from a superficial scarification to a more or less extensive removal of tissue *en masse*. Many cases thus treated have relapsed; some few cures are reported. I do not emphasize these measures, because they should not be considered as treatment specific for this disease. In suitable cases, judiciously employed, by removal of diseased tissue, as well as by the reduction of hypersensibility and abnormal congestions, the system and part affected are put in the best possible condition not only for recovery from the attacks of hay fever but for the maintenance of the general bodily health, by the application of the familiar surgical principle of physiologic rest. Let us be assured, however, that we are not dealing with something mysterious and inscrutable depending upon some obscure condition of atmospheric influence or irritation coincident with a mere idiosyncrasy, but with a true morbid condition existing in the individual, the whole nature of which, I regret to say, we are yet unable to understand. Hay fever is probably, in its incipiency, a disease of the complex tissues of the nasopharyngeal mucosa peculiar in that the irritant affects primarily the terminal nerve fibres, the implication of the secreting and vascular elements being secondary, as is shown by the fact that the engorgement of the tissues of the nose and of the face and the excessive lachrymation are largely due to the violent prolonged paroxysm of sneezing. The pathologic condition subsequently extends by continuity to the bronchial mucous membranes, and later results in a hyperesthetic condition of the allied centric nerve ganglia. Pollen, like any other fine dust, is a mere mechanical irritant.

For those afflicted by the disease who hope to outgrow it, I may say, although I have known one case of a cure by a trip to Europe, in a gentleman over sixty; another sufferer, who died at the age of ninety-four, had had the disease every year for fifty years.

Personally, with regard to the treatment, with all due respect to our modern rational and experimental therapeutists and to those of our rhinologists who gouge and burn and saw, in spite of all the remedies that I have recommeded for others—for myself when an attack comes on—as it has for twenty-two years, and probably will for twenty-two more if I live—I shun drugs and drugs stores and specialists, and flee like a bird to the mountains.

CALOMEL AS A CURATIVE AGENT IN DIPHTHERIA.

By LEONARDO D. JUDD,* M. D., Philadelphia.

I propose to speak of the specific treatment of this terrible scourge from my individual experience, covering a period of fifteen years. I shall not burden you with a citation of many, but will select a few of the illustrative cases to demonstrate the treatment which I have learned to consider as the nearest to that of a specific of any I have known. When I state that, through my experience with this disease, and in the treatment of it, diphtheria has been robbed of its terrors, I utter that which is the offspring of a thorough conviction based upon the curative results obtained.

The treatment of diphtheria by mercury and its preparations is not new, but there has been no well-defined application of any one form of this drug which would inspire sufficient confidence or assurance to carry it to a successful issue. Trousseau gives, in his graphic style, a good argument explanatory in part, of its action, and yet he plainly states that he has a dread of its use, because of the constitutional effects in "modifying the blood, augmenting its fluidity, and so changing its state that the secretion becomes less plastic;" and he goes on to say, "so far am I from denying the constitutional action of this medicine that I have a great dread of it, and I believe that the topical action is that alone which is of use.''

---

* Read before the meeting of the American Climatological Association.

It is the constitutional action that, in my estimation, is the effect to be sought after, as well as the topical, upon which I lay great stress. Had the germ theory been as well understood in Trousseau's day as it is now he would have modified, if not entirely changed, his opinion relative to the action of this drug and its preparations in the treatment of diphtheria. That fearless exponent of the calomel treatment, the late Dr. Riter, of Pittsburg, also failed, as we can now see by light of modern research, to grasp the true philosophy of its action, yet he had no dread of the constitutional effects when skilfully handled and carefully guided. He claimed, in a letter to his friend and classmate, Dr. E. R. Squibb (as published in Squibb's *Ephemeris*, September, 1882) that ''Diphtheria is a *functional disease of the liver*.'' ''The remote cause, inspissated blood, and the thesis of infection, contagion, micrococci, etc., are moonshine, transcendental tomfoolery.'' ''The approximate cause—*too much fibrin in the blood*.'' In the light of his etiology he fearlessly gave calomel, citing the case of a boy, eight years of age, to whom he gave a scruple in the first dose, and every hour ten grains until he had ''half an ounce of calomel in his *primaviaria,* not *prostrated,* but *restored*.'' ''I must here say,'' he writes, ''my cases have been hundreds—never saw hypercatharis—have had to give salines—never saw salivation or other mal-effect.'' It was his opinion, as is also mine, that in handling the severest type of diphtheria the danger lies, not in giving too much calomel, but rather too little, and in not having the courage to push the drug until the bowel action shows the characteristic discharge, which I shall mention later on. Whether right or wrong as to the etiology, he has piloted the way to overcome this scourge of humanity in the practical use of a drug theoretically admitted by great teachers to be most potent for good. The rugged strength, the fearless manner of expressing his knowledge, born of a rich and varied experience, carries conviction with it.

It was about this time, having charge of the Infants' Home, that I attended a child, eighteen months old, with a typical case of malignant diphtheria, which had steadily progressed toward a fatal issue in the face of the usual treatment as generally taught and employed. She was nearly in a moribund condition when I felt justified in resorting to the heroic treatment of calomel. Barely able to swallow, we succeeded in giving ten grains of calomel in water at the first dose, following with five grains every hour with instructions to stop when a full free characteristic dejection occurred. It took eighty grains to reach such an effect; the child commenced to improve from the fourth dose, and made a splendid recovery; not the slightest ill effect followed. A little later on, a woman, about fifty-five years of age, weighing 200 pounds, was scratched on the first joint of the third finger of the left hand by a neighbor's child dying with malignant diphtheria, whom she endeavored to hold while the physician sprayed the throat. The child died in half an hour after. My patient experienced "a peculiar deathly sick feeling," which she could not account for. After washing and laying out the child she went home and took a bath; while in the tub the same peculiar "deathly feeling" passed over her, and she noticed that her extremities had a "bluish look," her finger was beginning to pain at the seat of the lesion. I was called and found her greatly prostrased, severe pain in finger with red line running up the arm, the seat of the lesion inflamed and painful. Already, within so short a time she experienced constriction and swelling of the throat. Believing I had a case of inoculated diphtheria, I placed her on iron and chlorate with potash and gargle. The next day I saw her, with Dr. R. G. Curtin, in consultation, when the advance had been most rapid and severe. Not only were the axillary, mammary and post-cervical glands involved, with red lines running up a swollen arm from the now badly ulcerated finger-joint, but also the membrane had involved the throat and post-nares. Her neck was badly swollen, and she, breathing with difficulty, was bathed in a cold, clammy sweat, features pallid and pinched, a cyanotic condition becoming manifest—all this within thirty-six hours from the time of receiving the initial scratch. With a reliable trained nurse to rigidly carry out the instructions, we determined upon the calomel treatment, basing a hope upon the experience of the case of the child I had last treated for diphtheria, as hereinbefore mentioned. We gave a scruple at the first dose, and ten grains every hour thereafter for thirty-five hours, when a copious dejection occurred; smaller ones had preceded, but not until 365 grains had been given did we get the characteristic action, then the calomel was stopped. She ejected from nose and mouth at intervals during the exhibition of the drug large pieces of membrane, although no gargle or spray was used. We had little hope of saving this woman up to the time she had taken fifteen doses, or 160 grains; but from that time on she steadily improved in strength and appearance.

About every three hours a mild solution of chlorate of potash was given during the treatment. Calomel was dusted over the initial lesion on the finger, which took on a healthy action. She made a splendid recovery, was only inconvenienced for a short time from the partial paralysis of the muscles of deglutition and impairment of the sense of touch in hands and feet. These symptoms rapidly disappear under the use of faradization; there was not the slightest evidence of ptyalism or other mal-effect. The remarkable specific action of calomel in large doses was here magnificently exemplified.

On the strength of the experiences related I have ever since employed the calomel treatment in diphtheria, and my cases have been not a few. I have seen but three perish—one, an unruly ten-year-old lad, that would not take the medicine from a foolishly weak, fond mother, who would not have a nurse; and the other had a mother, but no nurse; she thought it "a shame to disturb the child to give it medicine when it was sleeping so quietly."

One other died after the diphtheritic symptoms had been mastered, but from what seemed to be a cerebral involvement, presumably meningeal, that evinced itself within forty-eight hours after the initial symptom. I am not prepared to say that smaller doses, oft repeated, would accomplish the desired result; I doubt it in such extreme cases as recited. And yet, last summer at a mountain resort, I attended a boy, about eight years of age, with naso-pharyngeal diphtheria. The submaxillary and cervical glands were greatly engorged, giving promise of direful results, especially when I found he was just convalescing from typhoid fever. Fortunately, a good trained nurse was with the family. The strongest preparation of calomel I had with me was the one-quarter grain tablet triturates (with sugar or milk). One tablet was given every twenty minutes, day and night, when in forty-eight hours a favorable change was noticeable, although no characteristic action on the bowels had taken place. The nostrils were occluded by membrane, when it occurred to me to make an application of calomel in solution through the nostrils. In a tumblerful of water I dissolved about two hundred of the one-quarter grain calomel and sugar-of-milk triturates, ordering the nostrils to be syringed every two to three hours with the solution after being well agitated; the effect was marvelous. Inside of twenty-four hours from the commencement of this treatment the nostrils were comparatively clear of membrane, the breathing quite natural, and the bowels had acted freely. The whole aspect of the child had changed for the better. In this case, as in others, a marked general improvement immediately followed. These cases, unlike those convalescing from diphtheria after ordinary treatment, exhibited a noticeable freedom from the terrible enervation which so frequently ends in marked prostration or heart-failure.

It is not necessary to further cite instances in my experience to substantiate the claim I make as to the virtue of the calomel treatment in diphtheria. There are many points untouched that, if discussed, would still further prove lhe value of this curative agent. Believing, as I do, that all sore-throats, where the tonsils are involved and where false membrane exists, are in some degree related to diphtheria, I never hesitate to exhibit calomel in small doses at first, and by its action prove or disprove the diphtheritic tendency of the case. If the tenth of a grain given every hour, dry, upon the tongue, fails to act upon the bowels in any reasonable time, say in from eight to twelve hours, I assume there is more than an ordinary condition existing, and strengthen the dose, or shorten the time between doses accordingly.

AS TO LOCAL APPLICATIONS.

When there is extreme malignancy, I would employ a solution of calomel, as cited.

I have not found it necessary to use gargle or spray during the activity of the disease, or when employing the larger doses of calomel, sufficient of itself as a topical application. In children particularly, the exhaustion following the struggle that generally occurs with each effort does more harm than good.

(I believe that in diphtheria, as well as in scarlet fever, more damage has resulted from the use of gargles, sprays, or swabs than is generally recognized.)

In ordinary cases I frequently recommend diluted peroxide of hydrogen or listerine. Later on, a solution of chlorate of potash, iron and glycerine, as a gargle or spray, greatly strengthens and soothes the enfeebled membrane of the throat; also, given internally, during convalescence, it is most valuable.

In true diphtheria calomel is slow to act on the bowels, and herein lies its diagnostic value, if in doubt. The more severe the type the greater the quantity to be given.

I have spoken of the *characteristic dejection* to be secured, especially in the malignant type, before we should let np in the administration of the drug. It should be a green, copious, frothy discharge, resembling "frog spittle," such as may be seen in an old water-trough.

AS TO DANGER OF PTYALISM.

There is no danger. So long as it has the bacilli to antagonize, that alone seems to demand all its energy; and when it has conquered, it leaves in the characteristic evacuation described, and the patient is *absolutely free from any mal-effect* I have never yet seen a case of diphtheria salivated by calomel in large or small doses, nor have I seen it create hypercatharsis in any case of diphtheria.

I am not unmindful of the potency of this drug, and I certainly would not recommend its heroic use without proper discernment and without good, intelligent, reliable nursing. Sleep too often means death in these cases, and the wakefulness necessary in the frequent administration of the medicine will do only good to the patient and reward the nurse, for from twenty-four to forty-eight hours generally determines the issue.

Personally, I am satisfied with calomel in the treatment of diphtheria; I cannot concieve of any treatment safer or whereby better results might be obtained.

DISCUSSION.

DR. NEWTON: I reference to Dr. Judd's paper, I wish to say that in his dependence upon calomel he greatly resembles a friend of mine who is a physician in Orange, New Jersey. This doctor does not fear diphtheria, and claims that he has never lost a case of that disease. He also continues the use of the drug until he obtains the green, frothy discharges described by Dr. Judd. He insists that the calomel be given early in the disease.

He gives three grains every hour, dry, on the tongue. Some three years ago my little son, aged about five years, contracted diphtheria of a severe type. I was so much impressed by the severity of the somptoms that I sent at once for Dr. Love; but pending his arrival I gave the boy probably thirty grains of calomel in divided doses. Before the doctor came the child had changed for the better. Although he was subsequently very sick, he made a good recovery.

DR. BRANNAN: I have been much interested in Dr. Judd's paper, and should be inclined to try his method of treatment at the first opportunity. I meet with but little diphtheria in private practice, but during the past four years I have seen some two or three thousand cases in the Willard Parker Hospital in New York, and my experience with calomel differs in some respects from that of Dr. Judd. In the first place Dr. Judd stated that he had found calomel an aid in the diagnosis of diphtheria, because of the slowness with which it produces catharsis in that disease. In the Willard Parker Hospital it is the routine practice to give each patient small doses of calomel, repeated every hour or two, until the bowels are well opened. The results of this treatment are all that could be desired, and we are never obliged to resort to other laxatives.

In the second place, Dr. Judd said that he had never seen any hurtful or depressing effects from the large amounts of calomel he is accustomed to give. Here, again, our experience conflicts with his. It was the custom at one time in the hospital, previous to the introduction of antitoxin, to employ calomel sublimates for the relief of laryngeal stenosis. The stenosis was often apparently relieved, but it was noted that the patients were afterward markedly anæmic. In fact, in passing through the convalescent wards, it was possible to pick out by their pallor those patients that had been subjected to fumigation. It is true that the calomel was not administered in the manner followed by Dr. Judd; but, in both cases the specific effect of the drug was sought and obtained, and I should think that the harmful results would also be the same.

DR. BABCOCK: I should like to ask whether the fact that anæmia was produced by this drug is not explained by the fact that it was administered by the mouth.

DR. JUDD: I have nothing further to say in conclusion than this : I have never noticed anæmia as a pronounced symptom or sequela. I have never tried fumigation, nor, in fact, any other mode of administering calomel, other than by the mouth and in the various doses mentioned in my paper. I do not believe that the administration of calomel by fumigation could be nearly so effective as by the mouth ; the topical action would not be so emphatic, which, in my opinion, is so very important. I believe fumigation would more likely produce disastrous blood changes.

Although I have not kept a systematic record of all cases, I have, on going over my books and, as memory recalls, from my own practice and those treated in consultation, tabulated twenty-three cases of the most malignant type and forty-two of pronouncedly severe cases, independent of a much larger number which might be called mild cases of diphtheria.

As stated, of the entire number I have only known three to perish, and two of these were undoubtedly due to bad nursing. I therefore cannot conceive of any treatment more successful or of any whereby effects are so easily controlled by the physician. Again, I lay the greatest stress upon faithful, intelligent nursing.

THE TREATMENT OF GOUT BY NATURAL MINERAL WATERS.*

By CHARLES C. RANSOM, M.D., New York.

In studying the literature of gout one cannot but feel how sad a commentary on the progress of medical science is the fact that the theories as to the causation of gout held by the ancient Greek writers, even as early as Hippocrates, three hundred and fifty years before the Christian era, were quite as reasonable and susceptible of proof as are those of the present day.

Hippocrates considered the disease due to the retention of *humors* in the system, and advised purging and the application of cooling lotions or cold water. Substitute the name uric acid for humors, and you have the most modern theory and treatment of to-day.

Following Hippocrates, various ancient writers, such as

---

*Read before the American Climatological Association at its meeting in Washington, D. C., 1897.

Galen, Seneca, Aretæus, Cælius, Aurelianus, and others, showed their keen powers of observation in studying disease by ascribing to the growing luxurious modes of living the production of the gouty condition.

While we also are cognizant of the fact that luxurious habits, lack of exercise, and excesses are predisposing factors in the causation of the gouty condition, we are as ignorant as they were as to the true nature of the *materies morbi*, and must perforce say with Aretæus the Cappadocian, "None but the gods can truly understand it."

Notwithstanding the fact that diversity of opinion exists as to the true nature of the affection, nearly all writers are unanimous as to the predisposing factors, and there is consequently not so great a difference in the object sought by treatment as one might naturally expect.

To stimulate functional activity, and thereby increase metabolism and the excretion of morbific matters, and to correct vices of living, must be our arm in the treatment of this disease.

It will be readily seen how a sojourn at a properly selected watering-place meets all these requirements, The choice of such a place is very largely a mattet of personal opinion with the physician, and the different classes of waters have their various advocates.

There are many things to be considered in the selection of a watering-place for gouty patients. As a rule, such patients are nervous and irritable, and need a pleasant environment where they can be occupied and diverted and lead an out-of-door life, while their treatment is made a pleasure rather than a drudgery. The fact must also be borne in mind that results of treatment may be obtained from the hydrotherapeutic stand-point alone, irrespective of the mineral ingredients contained in the water used. The analysis of the water is, therefore, not alone sufficient in the selection of such a place, for unless the facilities for administering the waters are adequate, and the details of the bathing procedure are carefully carried out, the treatment, instead of doing good, may be productive of serious ills. While I believe thoroughly in the internal admininistration of mineral waters, as will be seen later, to my mind the most valuable mineral waters in the treatment of this disease are those that are used externally in the form of baths.

It is hardly conceivable that the chemical ingredients of most natural mineral waters are held in them in sufficient quantity to produce *per se* any marked curative effects upon the economy when taken internally. This is especially true of the alkaline mineral waters, the principle of whose action is to render alkaline the blood and the secretions. I do not wish to be understood as altogether decrying the use of alkaline waters. I believe that they have some value in augmenting the secretions and stimulating functional activity, but I do not believe that they alone should be depended upon to effect a cure, but should only be used as an adjunct to the bath treatment.

As my experience with the mineral baths has been especially in the use of the waters of Richfield Springs, which are sulphur waters, I naturally feel that this class of waters is unsurpassed in the treatment of the gouty diathesis, and I may be justified in my opinion by the most excellent results which I have obtained from their use—results which, so far as I can learn, have not been surpassed at any springs. In considering the treatment of gout by natural mineral waters I shall simply relate my personal experience gained from the observation of a great many cases which have come under my care during the past ten years at Richfield, and give you briefly a *resume* of the methods which I employ in application of these waters. The form of bath which we are in the habit of using in this class of cases at Richfield, and which seems to answer best, is the immersion or tub bath. The dose of the bath, if I may be permitted the expression, is regulated by its temperature and duration. The temperature will be found to vary with different subjects from 96° to 108° F., and the duration from five to fifteen minutes. The object sought in the application of the bath is to give such a bath as will produce to the fullest extent the physiological effect without exceeding it, for then depression would be sure to follow, and harm might result.

In determining the proper dosage much care must be exercised, for different patients vary very much in their reaction to the bath; and it will also be observed that the same individual will vary at different times.

A large experience, then, is necessary to conduct properly the bathing procedure, and careful and frequent observation of the patient must be had. We usually begin with a bath at a temperature of 98° F. and duration of eight minutes, followed by complete rest of an hour in bed. This bath is taken three days in succession, and preferably in the forenoon, two and one-half hours after a light breakfast. After the third bath the patient reports, and we note carefully the effects of the bath as seen by the sensations of the patient during and immediately after the bath ; whether or not there is depression or fatigue, whether there is exhilaration, how long these sensations last after the bath, if after the rest in bed following the bath there is any fatigue or depression, if there is a sensation of fulness in the head or oppression of breathing during the bath, excessive perspiration following the bath, etc. From these subjective symptoms and careful physical examination of the patient we determine whether it is wise to increase or diminish the dosage, or to continue it as we have begun. These observations must be made every three or four days throughout the ontire course of treatment, in order to insure the best results.

It is the custom of some physicians in all cases in which the baths are found to be depressing to order the bath every second or third day instead of modifying it. To my mind, this is very bad practice. If a bath is so depressing that a patient can take it only once in three days without ill effects following, it is never a proper bath for that patient. The bath should be modified by lowering the temperature and shortening its duration, and it is exceedingly rare that a bath cannot be properly adopted by these means. A bath at 96° F. for five minutes or even less will often accomplish everything desired, although to some it may hardly seem to be worth the while.

It will be found that nearly all patients taking a course of baths will suffer from a general systemic disturbance usually within the first week. The symptoms manifested in this condition are those of general malaise, headache, anorexia with coated tongue, and either constipation or a slight diarrhœa.

This is the condition described by writers on balnœlogy as the "bath fever," and shows to the most skeptical that the medicinal bath is not a simple washing process, but is capable of producing as marked systemic effects as the ingestion of a drug.

At this time I omit the bath for a day or two. This, together with the administration of a little calomel, always suffices to correct the condition. From this time on, during the entire course, it is rarely necessary again to interrupt the bath. The course of baths usually consists of twenty-one, but this number is purely arbitrary, and frequently it is desirable to give more, though less than twenty-one is not enough to produce good results.

As I have already said above, I believe thoroughly in the internal use of water in connection with the baths, and it is my practice at Richfield to order the drinking of considerable quantities of water during the day. Free administration of a chemically indifferent water at proper periods diminishes the formation of uric acid and increases the secretions. The most potent agent in the internal use of mineral waters is the fluid, a property which is common to them all, and I therefore lay no particular stress with my patients upon the kind of water used. I usually order six glasses of water to be taken at stated intervals during the day. I often find it of advantage to prescribe some of the water hot. This is particularly the case with those who suffer much from indigestion. In these cases three of the six glasses are taken hot, one before each meal, not less than an hour before, and the stomach is thereby better prepared for the meal which is to follow, and in many instances the discomfort after eating is quite removed.

Next to the bath, regular and systematic exercise is of great importance in this condition. When it is possible active exercises out of doors in gradual and increasing amount is ordered. The form in which exercise may be taken is a matter of choice with the individual, but let it be borne in mind that if, for instance, walking is the form chosen, a short, brisk walk of even five minutes is of far more value than half-hour's slow and indifferent stroll. Bicycing, horseback riding, golfing, and various other sports which carry with them a considerable amount of out-door exercise are encouraged.

In conjunction with active exercise or without it in those cases in which active exercise would entail too much fatigue, passive exercise is ordered in the form of massage or Swedish movements. Special forms of massage are adapted to those cases in which deformities and the like exist.

Diet is another most important element in the treatment of the gouty condition, and in no part of the treatment does individualism play so important a role. The fundamental principle in dieting this class of patients is to build up and invigorate the perverted nerve centres, increase functional activity, and thus bring nearer to the standard of health the nutritive and metabolic changes. The needs of each individual, then, must be carefully studied, and while some restrictions should be placed upon them in regard to certain classes of foods, a so-called low-diet will be found in many instances to be most pernicious, and our best results will follow a generous plan of feeding.

At Richfield patients are allowed red meats and all others with the exception of veal and fresh pork, at least once a day, and twice, if desired. Potatoes and the vegetables that grow under ground are prohibited, as well as the use of sweets. Breadstuffs are somewhat restricted, but butter and other fats are allowed.

As to beverages, malt liquors and sweet wines are forbidden absolutely. If patients are in the habit of taking wine, and their condition needs a stimulant, there is no objection to a light wine, or, better still, Scotch whiskey with soda.

In conclusion, I wish to say in presenting this paper to you I have not attempted to tell you anything especially new in regard to the treatment of the gouty, but have endeavored to emphasize the importance of the proper administration of medicinal baths in this connection, and to make more clear to those of you who have not had the opportunity of observing this form of treatment, the *rationale* of the bath.

HOW TO LIVE ONE HUNDRED YEARS.

By JOHN ELFRETH WATKINS, Jr.

A prominent Washington doctor writes in the *Times–Democrat:* "Are man's chances for living a hundred years increasing?" is the question which the writer lately put to a number of Uncle Sam's wise doctors.

Dr. Theodore Gill, the eminent naturalist of the Smithsonian, said: "Yes; the average human life is growing longer as a result of improved hygienic regulations. Human food is more nourishing and more pure. The condition of the lower classes is better, so that the average of a generation is longer."

Dr. Fletcher, the well-known anatomist, said: "The chances for the endurance of life are increasing, as a result of continuous progress in preventive medicine."

Professor Otis Mason, the Government's encyclopædia on all subjects relating to human progress, said: "Yes; it is purely a question of progress. The average age of a white man in Washington is fifty years; of a native Australian negro, eighteen years. That is the key to the situation." The professor went on to say that just as progress in any manufacturing art meant the increased durability of the thing manufactured, with human progress comes increased durability of the human body.

Professor W. J. McGee, the ethnologist and evolutionist, said that the span of human life is gradually growing further and further past the alloted three score years and ten. This is a result chiefly of constant improvement in man's nutrition. In agriculture, by artificial selection, men are improving their food daily. In the beginning they ate the wild products of the earth and the water. Gradually they learned to put aside the best of the year's harvest or produce for seed, and the standard thus developed gradually. The earth is being made more fertile and the flesh of animals more abundant and more nourishing. As man's nutrition is being increased in standard, man is of course becoming healthier and longer lived.

By courtesy of the authorities of the colossal library of the Surgeon-General's office—the largest medical library in this country—the writer has been permitted to look over several hundred titles which, under the heading "Longevity," are to be printed in the great medical index which that office is preparing.

In all, several thousand cases of human life longer than 100 years were reviewed. From among these the writer attempted to find the hidden key to the secrets of extreme old age. Although many centenarians have had fads to which they attribute their abnormal lives, it is surprising to find how many of them have lived lives of intemperance. It has usually been pointed out by physicians that regular habits, plain food, early rising and retiring and abstinence from tobacco, alcohol and fast living of all kinds are the only stepping stones to a long life.

Noah Raby, reported as an inmate of the poor-farm at Piscataway, N. J., who is known to be 125 years old, has smoked ever since he was six years old, when he learned the habit from his mother, and says that he has drank whisky about as long as he has smoked, although he has been drunk only three times in his life. His diet consists of stale bread and milk, whisky, and occasionally a bit of boiled fish. He sleeps sitting in a chair to prevent rush of blood to the head.

James Welsh, of Savage Mountain, Md., who is 109 years old, and who doubtless is the oldest man in Maryland to-day, is reported as having an appetite like a school-boy's. He says he has taken his dram moderately all his life.

Alexander Freeman, a colored inmate of Sailor's Snug Harbor, N. Y., who was reported a year ago to be 110, began chewing and smoking tobacco when he was nine years old, and was still chewing at the time of the report, although he gave up smoking when he was 90.

Richard Reddick, a Pittsburg negro, reported as living a year ago at the age of 131, as established by the record of his freedom, had a tremendous chest, and accounted for his long life by the fact that he had always been temperate in his eating and drinking, although having always used tobacco, even since as far back as he could remember.

Sallie Morris, who recently died near Parkersburg, W. Va., aged 113, had, up to two years before her death, walked a distance of twenty-four miles one day in each week. She was an inveterate smoker, though a white woman.

Sarah Thomas, of Burryport, England, who two years ago received from the Prince of Wales a check amounting to a shilling for each of her 107 years, was described as "very fond of a well-seasoned clay pipe filled with very strong tobacco."

Betsy Saunders, who was lately reported as living in Norwalk, Conn., at the age of 105, told a visitor that she often felt wicked because she ate so much.

William Hotchkiss, who died in St. Louis two years ago at the alleged age of 140, and whose Masonic record proved him to be at least 121, had not washed himself in water for twenty-five years before his death; preferring to scour his exterior with dry sand and to occasionally stand over a brazier that his naked form might be enveloped in smoke.

One of the most picturesque examples of extreme longevity in modern times is Nicholas Savin, a Frenchman residing in Russia. His case was recently reported to the Russian Archæological Society. A year ago he was living at the remarkable age of 128. He remembered the mob before Paris, witnessed the execution of Louis XVI., enlisted under Napoleon in 1798, when he was thirty years old, and followed the great general as a soldier and afterward as a lieutenant through Egypt, Spain and other countries until after the retreat of the great army. He was instructor of languages in a Russian school until past 100, and when last heard of was living in poverty.

"Old Parr," servant to the English Earl of Arundel, who died in 1635 at the age of 153, was the most famous of historical centenarians. He was a glutton all his life, and died from the effects of a hearty meal. He did penance for immorality when past 100, and was married the second time at 120. His diet before he died generally consisted of "subrancid cheese and milk in every form, coarse and hard bread and small drink, generally whey."

John Bayles, an Englishman, who lived to be 130, "did not eat meat for some years, living on small beer, bread, butter and sugar." Physicians who dissected him attributed his great years to his strong, fibrous heart, low stature and tremendous chest capacity.

Francis Secardi Hongo, consnl of the Venetians at Smyrna, who lived to be 115, had five lawful wives, forty-nine children, and "a round number of concubines and slaves." His gray hair turned black, and he began to renew his teeth before he died. He abstained from alcohol and tobacco, and subsisted chiefly upon a little broth, "some nice little thing roasted," and fruit, which he always ate with bread. His only fault is said to have been "his being too much given to women." Henry Jenkins, the oldest Englishman of whom there is definite record, is said to have been 169 when he died in 1670. His diet was "coarse and sour." Paul the Hermit is said to have died at 113. An ancient French list of centenarians contains the names of many Roman Catholic Sisters. In this connection it may be stated that St. Patrick is believed to have lived to be 120, and St. Anthony 105. The regular life of a nun or a priest should be productive of longevity. This French list contains many names of the nobility and aristocracy, although that class has always been counted among those suffering the poorest chance for long life. The Irish Countess of Desmond is said to have been 145 when she died, and according to Lord Bacon, renewed her teeth several times. Atilla, King of the Huns, lived to be 124, having married a beautiful princess the day before his death. Lywarch Hen, a Welsh bard is said to have been 150, and Apollonius, a Pythagorean priest, 130. The latter, at an early age, renounced wine, women "and all sorts of flesh," discarded shoes, let his hair grow, and wore nothing but linen. St. Mungo of Wales, who always slept on the ground, is said to have been fully 165 when he died.

The opinions of physicians from all parts of the world, and of a few centenarians themselves, as to how we may live to be 100, are quite at variance and often amusing. One authority says; "All those people who become very old were married more than once, and generally late in life." "Bachelorhood," says another, "might be classed with the most unwholesome of trades and with a residence in the most unwholesome districts," as far as chances for great age are concerned. One writer endeavors to prove by statistics that bony, muscular men, with fair complexions, abundant brown hair and nervous-sanguine temperaments, have the best chances for long life. One centenarian prescribes the "breathing of the expired breath of virgins" as an elixir of life. An old lady who lived long past 100 attributed her many years to a regular diet of potatoes. Other theorists attempt to prove that extreme longevity is characteristic of mountainous regions. A Hungarian hygienist presents statistics showing that people who sleep on the first two floors above the ground have the greatest chances for long life, other things being equal. An American doctor believes that we will have good chances of reaching the span of 100 years when we drink but pure, soft water. Hard water, in his opinion, makes the bones brittle, and causes the hair to fall out. An English authority presents a long argument to prove that natural death is not the result of old age, but of "a gradual process of consolidation, arising from substances which may be so far controlled as to preserve health and active life for an indefinable period." What was pointed out to the writer as possibly the most reliable treatise on the subject was that of Dr. Dechambre, a Frenchman, who argues that the ordinary duration of a man's life is naturally from 90 to 100 years. His argument was based purely upon scientific observations. The vital process which will indicate the ageing of an animal is, in his opinion, the hardening of the heads of the bones. In infancy they are cartilage, which gradually and uniformly hardens into bone. The maturing of all animals is in proportion to this process.

SYPHILIS IN ITS SANITARY ASPECTS.

BY EDWARD M. GRAMM, M.D., PHILADELPHIA.

(Read before the Philadelphia Medical Club, April 7, 1897.)

The civilization of the present day guarantees to every individual his right to life, liberty and the pursuit of happiness to the fullest extent. Paternalism is frowned upon by the spirit of our American institutions, and the courts of highest resort protect the individual from the least semblance of interference with his rights. The syphilitic is, on that account, hard to reach in an endeavor which might be made to restrict his personal liberty during the period when he is able to communicate infection to those with whom he comes in contact. Yet it is within the ken of all present that many an individual would at the present time be enjoying health, and it may be life, if it had been possible to keep some one isolated in such a manner that the disease could not have been transmitted. To many, even among physicians, the acquisition of syphilis presupposes sexual intercourse, which we know is not a fact in a great many instances. Indulgence in sexual pleasures has, of course, to answer for the great majority of cases; and nothing surprises me more, in dealing with patients suffering from the disease than the avidity with which they seek to indulge their appetite for those pleasures after they get over the first shock of the knowledge that they are affected with a disease which takes a long time to run its course. Many seek partners, with the guilty knowledge that by doing so they jeopardize the health and even the life of those who are willing to gratify them. As the sexual appetite is so imperative with most men and many women, and as most people have had no instruction with reference to its indulgence (the subject being avoided as unclean and secret by educators and parents), almost every one grows up in total ignorance of proper sexual indulgence and restraint. The physician knows that advice on the subject is not given more than passing notice, even when it is asked.

The present is a time when attention is being given to the sources of infection by the various diseases which have heretofore passed unnoticed by the community at large. Diphtheria, scarlatina, whooping-cough, measles, tuberculosis, receive their share of attention by boards of health, by large corporations employing people in various stages of health and disease, by corporations employed in the transportation of human beings, and by private individuals. Various schemes of quarantine, or at least supervision, of patients affected with diseases known to be infectious are broached from time to time, and find strong advocates, and as strong opponents. The newspapers take up the hue and cry after it is once started by those interested and air both sides of the question, with the effect of educating the masses still further in the direction of their duty in the premises. The expenditure of large sums of money is talked about in the endeavor to protect the present and unborn generations of men from the ravages of preventable disease, but syphilis is never mentioned.

To one who comes in contact much with patients affected with the disease, and who has learned by experience how many of the community are or have been the victims of the infection, and who sees how many of those whose forms are ravaged by the disease have acquired it in total innocence, the subject of the prevention of its spread is an engrossing one. How can we, as physicians, do our share in preventing others than those under our care from contracting it ; how can we as citizens advise measures which will limit it ; how can those whose duty it is to enact, enforce, and uphold beneficient laws on the subject perform their duty ? These are knotty questions which have passed through many minds, but the answers to them are not yet clear. If we, as physicians, notify the nearest and dearest to those who come to us with chancre that they are in danger of contracting a dangerous disease from our patient, how long would he come to us in the first place, and how much influence for good will we have over him in the second ? If syphilis is made the subject of a report to boards of health, how soon will the dishonest and time-serving physician and the charlatan have all the cases of veneral diseases under his care and the community suffer thereby ? Is a person who is dependent upon his labor for his maintenance to be deprived of it by excluding him from the company of the rest of the employes where he pursues his vocation? Who is willing to give an immediate answer?

It is a well-known fact that syphilis, where it is passed along the endless line by sexual intercourse, is much more rarely transmitted by inmates in houses of prostitution than by those women who reside outside of them but whose livelihood is gained by catering to the sexual passion of the opposite sex. Many women contract syphilis within houses of ill-fame; but the proprietress soon sends them away when their disease tells on the patronage of the establishment. Young women living at home and surrounded by moral influences contract the disease from renegades who obtain their consent to sexual indulgence, a consent which is marred only by the fear that intercourse may result in pregnancy, not once in many cases by the least thought of disease being an accompaniment of the pleasure obtained. It is true that some women have a hazy thought of "bad diseases," but they have not the least idea of how or why they were acquired by the person having them; they feel that such a one has been and is doing and that he ought to be shunned, but nothing tangible has been taught or told them, and therefore plausibility and a gentlemanly manner and clothing win the day, to their sorrow.

That the disease can be transmitted by mediate contagion almost never enters the mind of the laity. Even those who are known by women to have "bad diseases" are many times allowed to come into close contact with them in the household, the workshop, etc. Sad and numerous are the instances which come under the category of syphilis insontium. We can all recall some, even some whose baleful influence extended beyond the body of the first victim. That proper care could have prevented many of the cases none will deny; but on whom does the blame rest that preventive measures were not thought of and instituted?

It is an unfortunate fact that any one who broaches the subject of sexual matters, be he physician or layman, is branded as impure in his thoughts and intentions. Let any physician publish accounts of sexual perversions, sexual dangers, matters concerning sexual health, and many (even in the profession) hold up their hands in holy horror because in order to make the subject intelligible without inventing a language for the sole purpose of expressing thoughts on sexual subjects, the English language is employed, and clear statements made by which the author is enabled to express his meaning. It seems to me that just here is where the reform should begin that will ultimate in such a knowledge of the existence of syphilis and other venereal diseases, and of their method of propagation and prevention being disseminated, as will confine those diseases to the smallest possible number of human beings, it may be to those whose carelessness and recklessness entitle them to no better fate. Sexual matters should be investigated with a scientific accuracy, so that physicians, parents and educators could teach facts to the coming generations, facts of which it is the right of every developing individual to become cognizant through the teachings of those whose age and experience enables them to speak ex-cathedra. No one who hears me to-night, I am sure, can point out an educator under whose care he has fallen in his young days who knew, much less taught him, his proper relation to the opposite sex. Not one of us, I feel certain, would be willing to say "My father or my mother took me aside and instructed me concerning sexual dangers and proper sexual gratification." Our medical works are conspicious by the absence of positive and incontrovertible truths relating to sexuality in the male and female. Accurate, scientific, eternal truths concerning so dominating a desire as the sexual one are, however, only the foundation-stones upon which to build when giving instruction which will lead individuals of both sexes to appreciate the possibility of contracting venereal diseases. Physicians, parents and instructors must have a clear knowledge of the disease under consideration (as well as of the other venereal affections), and be able to give convincing facts to growing boys and girls and to ignorant men and women. To advise a child to keep away from another, older one, because that one is "bad," is no way to impress the thought of danger upon the unsuspecting one, made unsuspecting through ignorance. So, also, when a boy or girl approaching manhood or womanhood shows by certain actions or expressions that sexual pleasures are not an unknown quantity any more, to advise our children to keep away from either, because he or she is not a fit companion for them, expresses ignorance or bigotry on our part to them; for, they argue, do we not know through companionship that he or she is bright, witty, kind, companionable? Place alongside of the statement that a certain person is not a fit companion for our growing sons and daughters, the reason—that such a one is frequently exposing himself to the possibility of contracting diseases which are communicable to them themselves, and they have a thought to turn over in their minds which breathes consideration for their welfare on our part. Let us, as physicians, do our part in instructing the community concerning sexual health, sexual hygiene, sexual diseases and contaminations acquired through sexual congress, and humanity will be in a better position to appreciate the dangers which hedge in promiscuous intercourse ; but, first of all, let us become well-grounded in the facts bearing on sexuality in both sexes.

HYPNOTISM—A STUDY OF ITS CLAIMS AND PHENOMENA.*

By JAMES U. BARNHILL, A.M., M.D., Columbus, Ohio.

Professor of Nervous and Mental Diseases, Ohio Medical University ;
Neurologist to Protestant Hospital ; Physician to the
Hospital for Women.

While the medical profession concedes that there may be something in hypnotism, it does not, as I believe, regard this protean complex of mental phenomena as a department of science. Inasmuch as it is receiving considerable attention from investigators, and is closely related to psychology and medicine, it is fitting that physicians should study the question. The friends of hypnotism entreat psychologists and physicians to investigate it. Some of them are quite sure it is based upon intelligible psychological phenomena, and that its thereapeutic possibilities are very great. They are satisfied that the interests of humanity demand that science take possession of hypnotism.

Let us review briefly its claims and phenomena. " Hypnotism is induced sleep." This is a very explicit, innocent-sounding appellation. There should certainly be agreement among the friends of the theory as to its scope and essential characteristics.

It has been defined as an abnormal mental condition, characterized by insensibility to most impressions of sense, with excessive sensibility to some impressions, and an appearance of total unconsciousness, especially that variety of that condition which is artificially induced usually by concentrating the attention of the subject upon some object of vision, as a bright bit of glass, or upon the operator, who generally aids in producing the result by making a few light passes with his hands, or an artificially induced somnambulistic state in which the mind becomes passive, acting readily upon suggestion or direction, and upon regaining normal consciousness retaining little or no recollection of the action or ideas dominant during the condition. This involved definition does not seem to be as clear as the term itself. Hypnotism, or hypnotic suggestion, according to another writer, is the influence of one mind over another, and is evident among the lower animal as well as man. It is of universal application. Orators and poets, and great generals like Napoleon, exercised it in an unusual degree. This is clearer as a statement, but more incomprehensible as a theory. One would suppose that great orators and generals would arouse rather than put to sleep those who felt the spell of their influence. Men have been for centuries studying the influence of mind on mind, recognizing it as the basis of education, culture, progress, the evolution of civilization, without any thought of this being hypnotism. It has been defined as the art of inducing an extraordinary or abnormal state of the nervous system in which the actor claims to control the actions, and communicate directly with the mind, of the recipient.

---

*Read before the Columbus Academy of Medicine, September 21, 1897.

Its range is as extensive, says another author, probably as the possession of brains or of elaborate nervous system. Hypnotic results have been obtained in the shrimp, lobster, lizard, tortoise, guinea pig and rabbit, as well as in the human subject. Hypnotism is induced sleep, induced dreaming and induced somnambulism. It includes mesmeric states, or animal magnetism, telepathy or thought-transference, lucidity or clairvoyance, trance, and the secret of the faith cure, mind cure and Christian science, table tipping and kindred facts. These involve an unusual suspension of some powers and an unusual activity of others. These definitions are drawn from Van Norden and Albert Moll, two of the best authorities on this subject. It thus appears that they give hypnotism a wide scope. They strive to give it respectability by including many of the legitimate facts of psychology, such as attention to secure sleep, association to induce new trains of thought, concentration or intensity of thought to render the mind oblivious to environment or pain, the acceleration of the circulation by joy, and its depression by sorrow ; the influence to ideas, and obedience to firm commands. The discussion of these plain psychological truths and their possible causal connection with hypnotic states forms by far the most interesting and rational portions of these authors' works. But such phenomena do not constitute hypnotism, and no possible extension of the powers and activities indicated can explain its manifestations. These plain psychological facts are known and acted upon every day by physicians. The gentle injunction to the child to go to sleep quiets its fretful mind and brings on sleep. Stroking the feverish brow stays the wandering thoughts and provokes slumber, etc.

But along with this most interesting collection of psychological principles, hypnologists invariably place a host of theories and doctrines, concerning telepathy, mind reading, animal magnetism, faith cure, thought-transference and kindred delusions, un-scientific and preposterous. The above definitions taken from their best authorities make it plain that so much is included under the modern term of hypnotism that there are more unknown quantities than terms in the equation. Their ambition to prove the reality and importance of hypnotism leads them to extravagant claims. Not satisfied by appropriating the established principles of psychology and extending their application ad infinitum, they make the extravagant claim that the influence of the thoughts and ideas of men upon one another, the influence of mind upon mind, is a hypnotic principle, and hence that the whole process of education, culture, philosophy, religion and human progress is a triumph of hypnotic force. Hypnotism makes clear things hidden from the special senses, and runs its course unhindered by the intervention of time and space. I quote from Van Norden : "Thought-transference, or telepathy, is now accepted as one of subconscious gifts of the human mind. It is freely used in explanation of yet more occult facts. This theory is, that thought leaps from one mind to another by processes unexplained. The phenomena occur most persistently and vividly in the hypnotic trance. Pepper on the operator's tongue will cause the patient to make a wry face."

(TO BE CONTINUED.)

The Annals of Hygiene and of Medicine

PUBLISHED MONTHLY

SUBSCRIPTION, TWO DOLLARS A YEAR, IN ADVANCE

Address all communications to

HYGIENIC PUBLISHING COMPANY

All subscriptions to "THE ANNALS OF HYGIENE" are taken "until ordered discontinued," and no agent has authority to make any other arrangement. At end of time to which subscription has been paid or promised, a bill for a year in advance, with return envelope, is sent, and if journal is no longer wanted, the subscriber should mark "Discontinue" on the bill and return to us. A failure to so return bill is considered an order to continue.

COMMUNICATIONS SOLICITED.

We are always anxious to receive short communications—500 to 1000 words—on practical subjects pertaining to hygiene. To any one sending us an acceptable article, we will forward THE ANNALS OF HYGIENE for one year *free*.

EDITORIAL.

(The following is taken from the editorial pages of the *Medical and Surgical Reporter*).

The following narrative is an abstract from a recent number of *Prinier's Ink,* a journal for advertisers:

"The business was founded eight years ago in London. The American offshoot has been in existence for three years. Before we looked around for new worlds to conquer we made a success of our first field. Would you like to hear of our advertising course?

"Well, *the first two years we worked entirely through physicians. That made our stability.* Then a stock company was formed, and we began to advertise to the consumer direct. We have only been at it two years, yet in that time we have been able to achieve a remarkable success. We advertised mainly in the dailies and a few monthlies, taking large space, never less than two columns, and often entire pages. During the first seven months we spent a little over $10,000 a month, and yet do you know that even through this experimental period it was an unqualified success, for we covered not only advertising outlays but the entire expenses of the business. In fact from the outset, this new policy of advertising paid.

"Coming to America, the first two years we adopted our *earlier* English policy, *advertising to the medical profession, putting our products on a staple footing, and acquiring, as we had done in England, numerous professional endorsements of our specifics.* But we were not satisfied to go thus slowly, and about three months ago, *embued with the spirit of American enterprise,* we inaugurated direct advertising.

"*The doctors resent our advertising thus? Quite the contrary. They commend us, because we advocate our remedies on strictly scientific principles. It seems to attract them. It is only the narrow-minded ones who believe or affect to believe that by going to the people direct with our grand remedies we are largely curtailing their opportunities. However this may be, the broader and more liberal spirits treat such restrictions as below contempt. It is partly on the advice of doctors, indeed, that we advertised direct, and you will remember that in many of our ads we recommend the sufferer to see the doctor also.*

"We promise to send free samples to inquirers who will mention the paper through which they are induced to send. It works nine times out of ten.

"At present in America we are spending about $5000 a month in this way; but then this is the silly summer season, and so far we have confined ourselves to a very limited territory. In the fall we intend to branch out, but to what extent we have not yet determined."

This is the gist of an interview between the "Little Schoolmaster in the art of advertising" and a business firm dealing in medical specialties. The statement italicised by *The Reporter* will prove interesting reading to physicians and need no comment.

"Imbued with the spirit of American enterprise" forsooth!

Which particular spirit of American enterprise is thus libeled is not determined by the context. Spirit disembodied is utterly elusive. The character of any particular spirit can be predicated only from manifestations through material media. The more diverse the media and the more varied the manifestations the greater the liability to confusion. Consequently mistakes of identity are both easy and frequent. Responsibility should be properly placed in event of disaster. There was once an enterprising spirit named Legion, and the enormous fatality to swine imbued with it is a matter of authentic record. This particular case occurred abroad, but analogous cases are not unknown in America.

The Reporter does not question the techical legitimacy of the policy outlined. Commerce is not a profession nor are business operations subject to the special code of professional ethics. The medical profession now recognizes this fact, and, though it does not relish being "worked" for the profit of schemes which it has condemned on general principles, it has come to regard with equanimity if not indifference projects it might well denounce as treacherous. This particular policy has been tried before, and there is nothing apparent to exempt the present attempt from the common fate, as shown by experience—failure. Experience has also shown that when any special product which acquires stability through professional support declares independence of medical men, and appeals direct to the public, the move is prompted by a lack of business sagacity or by the absence of intrinsic value peculiar to the product. The latter is by far the most common.

In these days of experimental therapeusis and pharmaceutic invention, nothing but a medicinal staple can successfully contend with or long survive the studied indifference or incidental neglect of medical practitioners.

It may be noted that whenever the conservatism of the "bigoted medical profession" has operated to the disadvantage of a particular business enterprise, the result has *not* been detrimental to humanity.

NOTES AND COMMENTS.

THE PHYSICIAN AND MORALS.

A physician who cannot assimilate morals into his being can never expect to amount to much as a man. In other words, a physician as a man is measured by the depth of his moral nature, and not by the pretensions to professional greatness with which he would veneer his real self. It is for this reason that many men seemingly great are really small. They are out of harmony with true success, because they are out of harmony with their better selves. They play at greatness, for they cannot achieve it. They array themselves, as does a child, with the symbols of greatness—such as affixing to their names LL. D., Ph. G., etc., with the vain hope that the uninitiated may with reverence bow to their stupenduous learning. They interview themselves in the daily press, present the vast array of their acquirements (largely imaginary), have themselves selected as surgeon-general to Cuba —all on paper, however—with the same vain hope that some layman may read and think them great. Such are a few of the methods of the vain pretenders, who never succeed, but are always posing before the public or the profession, as does the spider before the fly. There is a reason for failure here, and that is, because they are out of harmony with, and are not true to, themselves, for the mere making of money is not professional success.—*Medical Fortnightly.*

As of interest to the intelligent health officer of one of our cities, who for years struggled with the unsanitary practice among some of his milkmen of transporting swill in their milk carts, we mention that the laws of Roumania, "half-civilized Roumania," forbid this and provide that the udder of the cow shall be washed before milking is begun, and that the milkers shall wear clean clothes and shall wash their hands before they begin.

BICYCLING FOR WOMEN.

Theilhaber believes that bicycling for women, when not participated in to excess, is an excellent body-gymnastic. He advises that women should not, as a rule, ride faster than nine to eleven miles per hour, and the maximum day's journey should not be more than thirty-one to thirty-seven miles. The exercise does not cause hyperæmia of the internal genitals. A comparison between bicycling and running a sewing machine is false, the forms of movement completely differ. That a tendency to masturbation originates from friction of the external genitals when the rider sits in the upright position is not true, except, perhaps, where the labia are widely separated. This is avoided by employing the Christy or a similarly constructed saddle. A relative increase of the sexual desire usually occurs, but this is explained by the accelerated metabolism and excited action of the regulative functions. Abrasion of the genitals or even pruritus are frequently observed, particularly in fat women, and those who perspire profusely. In time, however, this tendency disappears, as the tissues become more resisting. To avoid this the writer recommends the Thomann, Buttner, or Christy saddle, and he has in many cases employed zinc ointment as a prophylactic. That only one group of muscles is strengthened is not true or is labor hindered through hypertrophy of the muscles at the pelvic inlet. He advises that the dress should be hung from the shoulders and made of woollen material, also that no corset or girdle should be worn. Diseases, like chronic bronchial catarrh, pleural thickening, certain forms of phthisis, and some cases of heart disease, he believes, are benefited if the greatest care is observed. Bicycling is particularly to be recommended for nervous diseases—neurasthenia, hysteria, and neuralgia of certain nerves. Anatomical diseases of the nervous system are improved. It is useful in general muscular weakness and chlorosis, when not participated in to excess; in gouty and lythic acid diathesis, diseases of the stomach of nervous origin, atony of the intestines, the latter, however, often follows. He recommends it for the amenorrhœa of chlorosis, and where there is an undeveloped uterus. In nervous dismenorrhœa it should be permitted where there is cervical catarrh, flexions and versions of the uterus. Hemorrhagic endometritis, gonorrhœa, tumors, diseases of the bladder, pregnancy, and during the menstrual flow are contraindications. In two instances the writer has observed fibroid tumors rapidly increase in growth from this cause, and two or three pregnant women under observation aborted. He believes, considering the large number of women now enjoying this sport, deleterious influences are very rare.

An ingenious nurse has devised a novel method for the cure of the crying habit in babies. When the little one begins to cry, the hand is placed over the mouth and nose and the breathing shut off for several seconds. As the crying is resumed the process is repeated. In a short time the child concludes that the crying is the cause of its discomfort, and it very philosophically ceases to cry.

In every school the pupils should be taught what to do if their clothing should take fire. They should be taught to throw themselves upon the ground,—into the grass, into the mud, or into the snow, or upon the floor and roll over and over. They should be charged against running and thereby fanning the fire into a fierce flame.

Listerine — THE STANDARD ANTISEPTIC

LISTERINE is to make and maintain surgical cleanliness in the antiseptic and prophylactic treatment and care of all parts of the human body.

LISTERINE is of accurately determined and uniform antiseptic powder, and of positive originality.

LISTERINE is kept in stock by all worthy pharmacists everywhere.

LISTERINE is taken as a standard of antiseptic preparations: The imitators all say "It is something like LISTERINE."

LAMBERTS' LITHIATED HYDRANGEA. *A valuable Renal Alterative and Antilithic agent of marked service in the treatment of Cystisis, Gout, Rheumatism, and diseases of the Uric Diathesis generally. . . .*

DESCRIPTIVE LITERATURE UPON APPLICATION.

LAMBERT PHARMACAL COMPANY ST. LOUIS

WHAT OUGHT MIDWIVES TO BE TAUGHT?

In the *American Journal of the Medical Sciences,* Herman answers this question briefly as follows: "The duties of a midwife are to attend a patient during and after a normal labor. She must understand antisepsis. She must know the causes of hemorrhage and how to control them. She must be able to recognize malpresentations and pelvic disproportion. She must also understand the normal forces of labor and learn to recognize a variation in them. She must take precautions against ophthalmia and be able, if necessary, to resuscitate a child. Her knowledge must also include the early symptoms of disease in young infants. A thorough acquaintance with the normal puerperal state should be included in her equipment and she must be able to diagnosticate puerperal disease. The amount of knowledge which the midwife is thus expected to have is certainly far in excess of that possessed by many. She must, however, be looked upon as an evil which cannot be wholly avoided. She is dangerous because she is rarely able to recognize the first symptoms of a serious complication, and such are so sudden in obstetric practice that the life of mother or child may be lost before she can summon one competent to deal with the emergency. While it is desirable, if midwives must exist, that they be as intelligent as possible, it is certainly far better to extend the out-patient work of maternity hospitals with graduate instruction, so that the field for midwife can be limited as much as possible."

THE CIVIL RESPONSIBILITY OF SEXUAL PERVERTS.

The following is from a most instructive article by Hamilton (*American Journal of Insanity*, April, 1869), on the above important subject: When contracts or wills are made by one woman under the influence of another, something more should be conceded as an invalidating factor than the existence of a pertinent and dominating delusion, for there is no stronger dominating influence than a continued appeal to the passions, and especially the sexual feelings; and the apparently harmless intimacy of two women may, if understood, lead to the perpetration of great wrongs and the perversion of property.

As the matter of proof is so difficult and the rights of women so zealously guarded by sentimental judges, the matter of determining the degree and depth of the intimacy is often hedged by seemingly insurmountable difficulties.

CONTENTS.

COMMUNICATIONS.

A Plea for Public Baths. By David Warman, M.D. 1
Municipal Abattoirs. By P. H. Bryce, M.D. 13
The Disposal of Waste-Water in the Country. By Harvey B. Bashore, M.D. 19
Hinderances to Health and the Advancement of Sanitary Science. By B. O. Reynolds, M.D. 21
School Hygiene: Effects of Foul Air in the School-Room. By T. W. Nuzum, M.D. 25
Children of Feeble Resistance: Their Care and Management. By John Madison Taylor, A.B., M.D. . . . 27

EDITORIAL.

Bathing 46
New Jersey Sanitary Association . . . 49
Pain and Rest in Diphtheria 53

NOTES AND COMMENTS.

Sleep Experiments 54
Night Terrors treated by Music 54
The Home-Hiring Tendency 54
Woman and her Diseases *vs.* Gynecology 55
A Tree's Metamorphosis 55
Does the College Woman Marry? . . . 56
Contagiousness of Tuberculosis in Hospitals; Isolation Recommended 57
Prevention of Infectious Diseases . . . 58
Did the Romans Smoke? 58
Gymnastics in Heart-Disease 59
Learn to Listen Intelligently 61
Dyspepsia Proof 61
Photographing Thought 62
The Paternal Benediction 63
A New Danger 63
The Disposal of Domestic Slop-Water in Isolated Houses 64

NOW READY.

DESCRIPTION OF THE OPHTHALMIC METHODS EMPLOYED FOR THE RECOGNITION OF NERVE DISEASE

By **CHARLES A. OLIVER, A.M., M.D.,**
ATTENDING SURGEON TO WILLS EYE HOSPITAL; OPHTHALMIC SURGEON TO THE PHILADELPHIA HOSPITAL; CONSULTING OPHTHALMOLOGIST TO THE STATE ASYLUM FOR THE CHRONIC INSANE OF PENNSYLVANIA.

IN this monograph Dr. Oliver has systematically grouped all of the most important eye symptoms which may be considered of value, not only to the ophthalmologist and neurologist but to the general practitioner, in the proper and careful study of the ocular manifestations of nerve disease. The subject matter is so indexed that ready reference to any desired symptom is obtainable.

Small quarto; 50 pp. Bound in cloth.

PRICE FIFTY CENTS. **Will be sent post-paid on receipt of price.**

Published by
UNIVERSITY OF PENNSYLVANIA PRESS,
716 Filbert Street, Philadelphia.

Important Medical Publications.

A Clinical Manual of the Diseases of the Ear.

BY

LAURENCE TURNBULL, M.D., PH.G.,

Aural Surgeon to the Jefferson Medical College Hospital, Philadelphia; President of the Subsection of Otology of the British Medical Association at Cork; author of a work on Hygiene of the Ear, etc., etc.

With a Colored Lithographic Plate, and Numerous Illustrations on Wood.
Revised Edition. 8vo. Extra Cloth, $4.00.

PRESS COMMENTS.

"The author has greatly improved his work in this edition, and it will meet a greater demand than ever. It is well issued, and worthy a place in the library of all practitioners."—*American Lancet*, Detroit.

"It is the most thorough treatise on diseases of the ear that it has been our pleasure to read. Every physician is in need of such a work, whether he has any other work on the subject or not."—*St. Louis Medical Brief.*

"We cheerfully commend the work, not only to the specialist, but to the general practitioner, as one of the best treatises yet issued upon the diseases of the ear."—*Nashville Journal of Medicine and Surgery.*

A System of Oral Surgery.

SIXTH EDITION.

BEING A TREATISE ON THE DISEASES AND SURGERY OF THE MOUTH, JAWS, FACE, TEETH, AND ASSOCIATE PARTS.

BY

JAMES E. GARRETSON, A.M., D.D.S., M.D.

Illustrated with Numerous Wood-Cuts and Steel Plates. Thoroughly Revised, with Additions. Cloth, $9.00; Sheep, $10.00.

The difference in form distinguishing the present from previous editions has explanation in the growing bulk of the volume. The last edition numbered over thirteen hundred pages, while the present one, if printed in the same way, would have reached nearly fifteen hundred. The thousand pages comprising the volume embrace all that is essential in the last edition, and such new matter as the advancement in surgery requires. This desirable effect is obtained by the enlarged page adopted. Changes are to be observed as compared with former issues, but these relate to advance in thought and experience, and not to change of base or principles.

For sale by all Booksellers, or will be sent, post-paid, upon receipt of price by the publishers.

J. B. LIPPINCOTT COMPANY,
715 and 717 Market Street, Philadelphia.

CONTENTS.

COMMUNICATIONS.

The Prevention of Diphtheria based on a Study of the Klebs-Löffler Bacillus. By Edwin Le Fevre, M.D. . . 65
Sewage-Disposal. By J. A. Mack, M.D. 69
The Proper Source of Water-Supply and the Domestic Well. By R. M. Wigginton, M.D. 72
Prevention of Disease. By M. L. Geiser, M.D. 75
Hygiene of Childhood: Clothing. By J. A. Rene, M.D. 77
School Hygiene: the School-Room. By R. M. Wigginton, M.D. 80
Defeat of Baneful Inheritance by the Individual. By Edgar Holding, M.D. 83
Catching Cold,—Its Cause and Prevention. By Fayette C. Ewing, M.D. 90
The Wearing of Veils, and its Effects upon the Eyesight. By Casey A. Wood, M.D. 98
Hygiene in Florida. By George Troup Maxwell, M.D. 101

EDITORIAL.

The Happy Medium 116

NOTES AND COMMENTS.

A Portable Lunch 71
Meat Allowance to Soldiers 74
A Safe Rule in Bicycling 79
Electricity cannot be Stolen 97
Safety from Lightning Stroke in Cities 117
The Lowering Death-Rate 118
The Wicked House-Fly 121
Safe Drinking Water for Travellers . . 124
Chronic Constipation of Infants . . . 125
Purification of Water 126
Age of Boat-Crew 127
Alcoholism in Europe and its Relation to Insanity 128
An Infecting Disinfector 128

NOW READY.

DESCRIPTION OF THE OPHTHALMIC METHODS EMPLOYED FOR THE RECOGNITION OF NERVE DISEASE

By CHARLES A. OLIVER, A.M., M.D.,
ATTENDING SURGEON TO WILLS EYE HOSPITAL; OPHTHALMIC SURGEON TO THE PHILADELPHIA HOSPITAL; CONSULTING OPHTHALMOLOGIST TO THE STATE ASYLUM FOR THE CHRONIC INSANE OF PENNSYLVANIA.

IN this monograph Dr. Oliver has systematically grouped all of the most important eye symptoms which may be considered of value, not only to the ophthalmologist and neurologist but to the general practitioner, in the proper and careful study of the ocular manifestations of nerve disease.

The subject matter is so indexed that ready reference to any desired symptom is obtainable.

Small quarto; 50 pp. Bound in cloth.

PRICE FIFTY CENTS. Will be sent post-paid on receipt of price.

Published by
UNIVERSITY OF PENNSYLVANIA PRESS,
716 Filbert Street, Philadelphia.

Important Medical Publications.

A Clinical Manual of the Diseases of the Ear.

BY

LAURENCE TURNBULL, M.D., PH.G.,

Aural Surgeon to the Jefferson Medical College Hospital, Philadelphia; President of the Subsection of Otology of the British Medical Association at Cork; author of a work on Hygiene of the Ear, etc., etc.

With a Colored Lithographic Plate, and Numerous Illustrations on Wood.
Revised Edition. 8vo. Extra Cloth, $4.00.

PRESS COMMENTS.

"The author has greatly improved his work in this edition, and it will meet a greater demand than ever. It is well issued, and worthy a place in the library of all practitioners."—*American Lancet*, Detroit.

"It is the most thorough treatise on diseases of the ear that it has been our pleasure to read. Every physician is in need of such a work, whether he has any other work on the subject or not."—*St. Louis Medical Brief.*

"We cheerfully commend the work, not only to the specialist, but to the general practitioner, as one of the best treatises yet issued upon the diseases of the ear."—*Nashville Journal of Medicine and Surgery.*

A System of Oral Surgery.

SIXTH EDITION.

BEING A TREATISE ON THE DISEASES AND SURGERY OF THE MOUTH, JAWS, FACE, TEETH, AND ASSOCIATE PARTS.

BY

JAMES E. GARRETSON, A.M., D.D.S., M.D.

Illustrated with Numerous Wood-Cuts and Steel Plates. Thoroughly Revised, with Additions. Cloth, $9.00; Sheep, $10.00.

The difference in form distinguishing the present from previous editions has explanation in the growing bulk of the volume. The last edition numbered over thirteen hundred pages, while the present one, if printed in the same way, would have reached nearly fifteen hundred. The thousand pages comprising the volume embrace all that is essential in the last edition, and such new matter as the advancement in surgery requires. This desirable effect is obtained by the enlarged page adopted. Changes are to be observed as compared with former issues, but these relate to advance in thought and experience, and not to change of base or principles.

For sale by all Booksellers, or will be sent, post-paid, upon receipt of price by the publishers.

J. B. LIPPINCOTT COMPANY,
715 and 717 Market Street, Philadelphia.

CONTENTS.

COMMUNICATIONS.

Education and Health. By Joseph F. Edwards, A.M., M.D. 129
Disinfection of Rooms after Contagious Diseases. By U. O. B. Wingate, M.D. 134
Curl Papers. By Jane A. Wright . . . 138
The Spread of the Bubonic Plague. By James Cantlie, M.B., F.R.C.S. . . 140
The Municipal Control of the Consumptive. By Thomas C. Craig, M.D. . 148
Excessive Physical Exercise as Cause of Nervous Exhaustion. By S. G. Webber, M.D. 155
Sociologic Reforms. By Arthur R. Reynolds, M.D. 161
The Physician and the Tobacco Habit. By Matthew Woods, M.D. 166
Cleanliness the First Principle of Hygiene. By Wilhelm Hotz, M.D. . . 170
Hygiene in Florida. By George Troup Maxwell, M.D. 176

EDITORIAL.

Sleep 182
Mental Exercise 186

NOTES AND COMMENTS.

A Queer Scottish Custom 175
The Eyes 181
Child-Study 189
"Bad Teeth" his Barrier 190
How to Fumigate a Room 190
The Effect of Alcohol upon the Growth of Children 190
Poison in Cosmetics 191
Mummied Alive 191
Biblical Measures and Distances . . . 191
Air used by a Human Being 192
Tomato-Poisoning 192
Cemeteries of Elephants 192

NOW READY.

DESCRIPTION OF THE OPHTHALMIC METHODS EMPLOYED FOR THE RECOGNITION OF NERVE DISEASE

By CHARLES A. OLIVER, A.M., M.D.,
ATTENDING SURGEON TO WILLS EYE HOSPITAL; OPHTHALMIC SURGEON TO THE PHILADELPHIA HOSPITAL; CONSULTING OPHTHALMOLOGIST TO THE STATE ASYLUM FOR THE CHRONIC INSANE OF PENNSYLVANIA.

IN this monograph Dr. Oliver has systematically grouped all of the most important eye symptoms which may be considered of value, not only to the ophthalmologist and neurologist but to the general practitioner, in the proper and careful study of the ocular manifestations of nerve disease.

The subject matter is so indexed that ready reference to any desired symptom is obtainable.

Small quarto; 50 pp. Bound in cloth.

PRICE FIFTY CENTS. Will be sent post-paid on receipt of price.

Published by
UNIVERSITY OF PENNSYLVANIA PRESS,
716 Filbert Street, Philadelphia.

Important Medical Publications.

A Clinical Manual of the Diseases of the Ear.

BY

LAURENCE TURNBULL, M.D., PH.G.,

Aural Surgeon to the Jefferson Medical College Hospital, Philadelphia; President of the Subsection of Otology of the British Medical Association at Cork; author of a work on Hygiene of the Ear, etc., etc.

With a Colored Lithographic Plate, and Numerous Illustrations on Wood.
Revised Edition. 8vo. Extra Cloth, $4.00.

PRESS COMMENTS.

"The author has greatly improved his work in this edition, and it will meet a greater demand than ever. It is well issued, and worthy a place in the library of all practitioners."—*American Lancet*, Detroit.

"It is the most thorough treatise on diseases of the ear that it has been our pleasure to read. Every physician is in need of such a work, whether he has any other work on the subject or not."—*St. Louis Medical Brief.*

"We cheerfully commend the work, not only to the specialist, but to the general practitioner, as one of the best treatises yet issued upon the diseases of the ear."—*Nashville Journal of Medicine and Surgery.*

A System of Oral Surgery.

SIXTH EDITION.

BEING A TREATISE ON THE DISEASES AND SURGERY OF THE MOUTH, JAWS, FACE, TEETH, AND ASSOCIATE PARTS.

BY

JAMES E. GARRETSON, A.M., D.D.S., M.D.

Illustrated with Numerous Wood-Cuts and Steel Plates. Thoroughly Revised, with Additions. Cloth, $9.00; Sheep, $10.00.

The difference in form distinguishing the present from previous editions has explanation in the growing bulk of the volume. The last edition numbered over thirteen hundred pages, while the present one, if printed in the same way, would have reached nearly fifteen hundred. The thousand pages comprising the volume embrace all that is essential in the last edition, and such new matter as the advancement in surgery requires. This desirable effect is obtained by the enlarged page adopted. Changes are to be observed as compared with former issues, but these relate to advance in thought and experience, and not to change of base or principles.

For sale by all Booksellers, or will be sent, post-paid, upon receipt of price by the publishers.

J. B. LIPPINCOTT COMPANY,
715 and 717 Market Street, Philadelphia.

CONTENTS.

COMMUNICATIONS.

The Nervous System in Disease. A Plea for Greater Recognition of the All-Pervading Influence of the Nervous System upon Disease in General. By Joseph F. Edwards, A.M., M.D. 193
Applied Christianity Essential to Health. By John C. McCandless, M.D. 225
Progress in Sanitary Engineering. By Sir Andrew Noble, K.C.B., F.R.S. . 231
The Teaching of Climatology in Medical Schools. By Robert De C. Ward. 242

EDITORIAL.

Society and Health 251

NOTES AND COMMENTS.

Little People 253
Science in a New Rôle 253
Wine for Science only 253
Peasant Credulity 254
What Women think About 254
A Perilous Period 255
Grapes 255
Chinese Boys 256

NOW READY.

DESCRIPTION OF THE OPHTHALMIC METHODS EMPLOYED FOR THE RECOGNITION OF NERVE DISEASE

By **CHARLES A. OLIVER, A.M., M.D.,**
ATTENDING SURGEON TO WILLS EYE HOSPITAL; OPHTHALMIC SURGEON TO THE PHILADELPHIA HOSPITAL; CONSULTING OPHTHALMOLOGIST TO THE STATE ASYLUM FOR THE CHRONIC INSANE OF PENNSYLVANIA.

In this monograph Dr. Oliver has systematically grouped all of the most important eye symptoms which may be considered of value, not only to the ophthalmologist and neurologist but to the general practitioner, in the proper and careful study of the ocular manifestations of nerve disease.

The subject matter is so indexed that ready reference to any desired symptom is obtainable.

Small quarto; 50 pp. Bound in cloth.

PRICE FIFTY CENTS. **Will be sent post-paid on receipt of price.**

Published by
UNIVERSITY OF PENNSYLVANIA PRESS,
716 Filbert Street, Philadelphia

Important Medical Publications.

A Clinical Manual of the Diseases of the Ear.

BY

LAURENCE TURNBULL, M.D., PH.G.,

Aural Surgeon to the Jefferson Medical College Hospital, Philadelphia; President of the Subsection of Otology of the British Medical Association at Cork; author of a work on Hygiene of the Ear, etc., etc.

With a Colored Lithographic Plate, and Numerous Illustrations on Wood.
Revised Edition. 8vo. Extra Cloth, $4.00.

PRESS COMMENTS.

"The author has greatly improved his work in this edition, and it will meet a greater demand than ever. It is well issued, and worthy a place in the library of all practitioners."—*American Lancet*, Detroit.

"It is the most thorough treatise on diseases of the ear that it has been our pleasure to read. Every physician is in need of such a work, whether he has any other work on the subject or not."—*St. Louis Medical Brief.*

"We cheerfully commend the work, not only to the specialist, but to the general practitioner, as one of the best treatises yet issued upon the diseases of the ear."—*Nashville Journal of Medicine and Surgery.*

A System of Oral Surgery.

SIXTH EDITION.

BEING A TREATISE ON THE DISEASES AND SURGERY OF THE MOUTH, JAWS, FACE, TEETH, AND ASSOCIATE PARTS.

BY

JAMES E. GARRETSON, A.M., D.D.S., M.D.

Illustrated with Numerous Wood-Cuts and Steel Plates. Thoroughly Revised, with Additions. Cloth, $9.00; Sheep, $10.00.

The difference in form distinguishing the present from previous editions has explanation in the growing bulk of the volume. The last edition numbered over thirteen hundred pages, while the present one, if printed in the same way, would have reached nearly fifteen hundred. The thousand pages comprising the volume embrace all that is essential in the last edition, and such new matter as the advancement in surgery requires. This desirable effect is obtained by the enlarged page adopted. Changes are to be observed as compared with former issues, but these relate to advance in thought and experience, and not to change of base or principles.

For sale by all Booksellers, or will be sent, post-paid, upon receipt of price by the publishers.

J. B. LIPPINCOTT COMPANY,
715 and 717 Market Street, Philadelphia.

CONTENTS.

COMMUNICATIONS.

The Nervous System in Disease. A Plea for Greater Recognition of the All-Pervading Influence of the Nervous System upon Disease in General. By Joseph F. Edwards, A.M., M.D. 257
Rapid Mechanical Filtration at Lorain, Ohio. By A. G. Humphrey, M.D. . 281
Food for Thought. By Georgia Merriman, M.D. 287
The Physician and his Profession. By J. K. Miller, M.D. 292
Hygiene and Spirituality. By Alfred C. Haven, M.D. 299

EDITORIAL.

Water 302

NOTES AND COMMENTS.

Butter in Plaster of Paris 280
Nourishment 291
Imperfect Assimilation in Infants . . . 301
Home-Made Malt Extract 304
Diphtheria and Roup in Fowls 305
The Old World's Centenarians 305
Danger in Public Baths 306
Child Study 307
Fish 308
Longevity and Labor 309
Preserving Meats by Electricity . . . 309
Need for Sleep 310
The Meccan Pilgrimage 311
How to avoid taking Cold 311
Domestic Sanitation 312
A Proposed Treatment for Consumptives 313
To Sterilize Milk 314
Emasculated Foods 314
The New Health-Meter 315
Climate for Asthma 316
Bread and Health 316
Leprosy's Spread in Hawaii 317
The Gooding Burial Plan 317
A Strange Burial Vault 318
New Cure for Bruises 318
The Scientific Aspects of the Recent Glove Fight 319
Sudden Blanching of the Hair 319
National Diet 319
The Sweet Pea *vs.* Flies 320
Danger in Infants' Foods 320
An Active Old Man 320
For Freckles 320

HIRES Rootbeer

CARBONATED.

Admittedly the most wholesome, refreshing beverage that can be prescribed for convalescents. It contains nothing that is not readily and perfectly assimilated. Composed of fresh, pure, natural roots, berries, and barks, it contains two most valuable diuretics,—triticum repens (dog grass) and juniper berries,—in addition to sarsaparilla, pipsissewa, hops, birch-bark, etc. These are scientifically combined, prepared with sterilized distilled water and carbonated. The tannin of the barks is converted by the action of peptone, in the process of fermentation, into gallic acid,—*producing a healthy action of the kidneys.* Any reputable physician is free to inspect the manufacture and formula of **HIRES Rootbeer.** Doctors commend it:

"Hires Rootbeer packages make decidedly the best and most wholesome drink."

"Hires is certainly genuine Rootbeer. I wouldn't use any other kind."

"I was so much pleased with Hires Rootbeer that I gave it to my patients, and was surprised with the results. A very delicious beverage."

"I have been using Hires Rootbeer all this season. My wife is nursing a baby, and has discovered that it improves quality and quantity of milk."

Sold as formerly, by all dealers.

Sold by all dealers by the bottle and in cases of 2 dozen pints See that HIRES and the signature, *Charles E. Hires*, are on each bottle. Package of HIRES Rootbeer extract makes 5 gallons.

THE CHARLES E. HIRES CO., Philadelphia.

Important Medical Publications.

A Clinical Manual of the Diseases of the Ear.

BY

LAURENCE TURNBULL, M.D., PH.G.,

Aural Surgeon to the Jefferson Medical College Hospital, Philadelphia; President of the Subsection of Otology of the British Medical Association at Cork; author of a work on Hygiene of the Ear, etc., etc.

With a Colored Lithographic Plate, and Numerous Illustrations on Wood.
Revised Edition. 8vo. Extra Cloth, $4.00.

PRESS COMMENTS.

"The author has greatly improved his work in this edition, and it will meet a greater demand than ever. It is well issued, and worthy a place in the library of all practitioners."—*American Lancet*, Detroit.

"It is the most thorough treatise on diseases of the ear that it has been our pleasure to read. Every physician is in need of such a work, whether he has any other work on the subject or not." —*St. Louis Medical Brief.*

"We cheerfully commend the work, not only to the specialist, but to the general practitioner, as one of the best treatises yet issued upon the diseases of the ear."—*Nashville Journal of Medicine and Surgery.*

A System of Oral Surgery.

SIXTH EDITION.

BEING A TREATISE ON THE DISEASES AND SURGERY OF THE MOUTH, JAWS, FACE, TEETH, AND ASSOCIATE PARTS.

BY

JAMES E. GARRETSON, A.M., D.D.S., M.D.

Illustrated with Numerous Wood-Cuts and Steel Plates. Thoroughly Revised, with Additions. Cloth, $9.00; Sheep, $10.00.

The difference in form distinguishing the present from previous editions has explanation in the growing bulk of the volume. The last edition numbered over thirteen hundred pages, while the present one, if printed in the same way, would have reached nearly fifteen hundred. The thousand pages comprising the volume embrace all that is essential in the last edition, and such new matter as the advancement in surgery requires. This desirable effect is obtained by the enlarged page adopted. Changes are to be observed as compared with former issues, but these relate to advance in thought and experience, and not to change of base or principles.

For sale by all Booksellers, or will be sent, post-paid, upon receipt of price by the publishers.

J. B. LIPPINCOTT COMPANY,
715 and 717 Market Street, Philadelphia.

CONTENTS.

COMMUNICATIONS.

Precaution in Diseases. By Elmer E. Beams 321
The Erect Posture. By Georgia Merriman, M.D. 324
Hygiene of Childhood: Exercise. By John Specht, M.D. 326
The Relation of Noises to the Public Health. By William C. Krauss, M.D. 330
Hygiene of Nursing and Food of Children. By C. F. Dougherty, M.D. . 340
Effects of Cigarette Smoke upon Children and Youth. By Selena Severson, M.D. 343
The Home of the Beautiful; or the Care of the Body. By Rev. J. B. Kenyon 346
Hot-House Children 347
A Portable Vacuum-Chamber for House Disinfection by Formaldehyde. By Wyatt Johnston, M.D. 348

EDITORIAL.

Habits and Customs 350

NOTES AND COMMENTS.

Nutritive Value of Meats 351
The Grape Cure 352
Are Malarial Diseases Air-Borne? . . . 353
The Treatment of Excessive Sweating of the Hands and Feet 357
Effect of the Bicycle upon the Pelvis of the Growing Girl 358
Meat-Poisoning 361
The Hygiene of Swimming-Baths . . . 362
Built like an Engine 364
No Natural Decline of Small-Pox . . . 365
Outgrowing Disease 365
Better than Modern Foot-Ball 366
Some Octogenarians 367
The Afternoon Nap 367
The Prevention of Sea-Sickness 368
The Art of Avoiding Colds 368
Pullman Wash-Basins 369
Penalty for Indirect Murder 370
Health Conditions in School-Life . . . 371
The Science of Change of Air 371
Infantile Athletics 372
Medical Inspection of Schools in New York City 375
The Wages of Uncleanliness 373
Sandow's Example 374
Be Good to Yourself 374
Notes and Comments continued on 374-384

HIRES Rootbeer

CARBONATED.

Admittedly the most wholesome, refreshing beverage that can be prescribed for convalescents. It contains nothing that is not readily and perfectly assimilated. Composed of fresh, pure, natural roots, berries, and barks, it contains two most valuable diuretics,—triticum repens (dog grass) and juniper berries,—in addition to sarsaparilla, pipsissewa, hops, birch-bark, etc. These are scientifically combined, prepared with sterilized distilled water and carbonated. The tannin of the barks is converted by the action of peptone, in the process of fermentation, into gallic acid,—*producing a healthy action of the kidneys*. Any reputable physician is free to inspect the manufacture and formula of **HIRES Rootbeer.** Doctors commend it:

"Hires Rootbeer packages make decidedly the best and most wholesome drink."

"Hires is certainly genuine Rootbeer. I wouldn't use any other kind."

"I was so much pleased with Hires Rootbeer that I gave it to my patients, and was surprised with the results. A very delicious beverage."

"I have been using Hires Rootbeer all this season. My wife is nursing a baby, and has discovered that it improves quality and quantity of milk."

Sold as formerly, by all dealers.

FIRST PRIZE
SPARKLING
KEEP THIS BOTTLE ON ITS SIDE IN A COOL PLACE
Hires
IMPROVED
Rootbeer
Chas. E. Hires Co. Philadelphia

Sold by all dealers by the bottle and in cases of 2 dozen pints See that HIRES and the signature, *Charles E. Hires*, are on each bottle. Package of HIRES Rootbeer extract makes 5 gallons.

THE CHARLES E. HIRES CO., Philadelphia.

Important Medical Publications.

A Clinical Manual of the Diseases of the Ear.

BY

LAURENCE TURNBULL, M.D., PH.G.,

Aural Surgeon to the Jefferson Medical College Hospital, Philadelphia; President of the Subsection of Otology of the British Medical Association at Cork; author of a work on Hygiene of the Ear, etc., etc.

With a Colored Lithographic Plate, and Numerous Illustrations on Wood.
Revised Edition. 8vo. Extra Cloth, $4.00.

PRESS COMMENTS.

"The author has greatly improved his work in this edition, and it will meet a greater demand than ever. It is well issued, and worthy a place in the library of all practitioners."—*American Lancet*, Detroit.

"It is the most thorough treatise on diseases of the ear that it has been our pleasure to read. Every physician is in need of such a work, whether he has any other work on the subject or not." —*St. Louis Medical Brief.*

"We cheerfully commend the work, not only to the specialist, but to the general practitioner, as one of the best treatises yet issued upon the diseases of the ear."—*Nashville Journal of Medicine and Surgery.*

A System of Oral Surgery.

SIXTH EDITION.

BEING A TREATISE ON THE DISEASES AND SURGERY OF THE MOUTH, JAWS, FACE, TEETH, AND ASSOCIATE PARTS.

BY

JAMES E. GARRETSON, A.M., D.D.S., M.D.

Illustrated with Numerous Wood-Cuts and Steel Plates. Thoroughly Revised, with Additions. Cloth, $9.00; Sheep, $10.00.

The difference in form distinguishing the present from previous editions has explanation in the growing bulk of the volume. The last edition numbered over thirteen hundred pages, while the present one, if printed in the same way, would have reached nearly fifteen hundred. The thousand pages comprising the volume embrace all that is essential in the last edition, and such new matter as the advancement in surgery requires. This desirable effect is obtained by the enlarged page adopted. Changes are to be observed as compared with former issues, but these relate to advance in thought and experience, and not to change of base or principles.

For sale by all Booksellers, or will be sent, post-paid, upon receipt of price by the publishers.

J. B. LIPPINCOTT COMPANY,
715 and 717 Market Street, Philadelphia.

CONTENTS.

COMMUNICATIONS.

Breathing and Bicycling. By John O. Roe 385
Food Adulteration and the Pure Food Law. By Dr. Lee K. Fremkel. 390
The Country Doctor 404
The Mouths of our School Children 405
The Study of Crime and Degeneration from a Medical Standpoint 407
Hygiene as Old as Moses 414
The Bicycle and Pereneum 418

EDITORIALS.

Important Notice to our Subscribers 419

HYGIENE FOR THE CHILDREN.

The Mouth and Throat. 421
The Urine 421
The Skin. 422
The Bowel Discharges 422

HIRES Rootbeer

CARBONATED

Admittedly the most wholesome, refreshing beverage that can be prescribed for convalescents. It contains nothing that is not readily and perfectly assimilated. Composed of fresh, pure, natural roots, berries and barks; it contains two most valuable diuretics,—triticum repens (dog grass) and juniper berries,—in addition to sarsaparilla, pipsissewa, hops, birch bark, etc. These are scientifically combined, prepared with sterilized distilled water and carbonated. The tannin of the barks is converted by the action of peptone, in the process of fermentation, into gallic acid,—*producing a healthy action of the kidneys.* Any reputable physician is free to inspect the manufacture and formula of **HIRES Rootbeer.** Doctors commend it:

"Hires Rootbeer packages make decidedly the best and most wholesome drink."

"Hires is certainly genuine Rootbeer. I wouldn't use any other kind."

"I was so much pleased with Hires Rootbeer that I gave it to my patients, and was surprised with the results. A very delicious beverage"

"I have been using Hires Rootbeer all this season. My wife is nursing a baby, and has discovered that it improves quality and quantity of milk."

Sold by all dealers by the bottle and in cases of 2 doz. pints See that HIRES and the signature, *Charles E. Hires*, are on each bottle. Package of **HIRES Rootbeer** extract makes 5 gals.

Sold as formerly, by all dealers.

THE CHARLES E. HIRES CO., Philadelphia.

"WELL PREPARED!! NUTRITIOUS!! EASILY DIGESTED!!"

HIGHEST AWARDS WHEREVER EXHIBITED

THE WORLD'S COLUMBIAN COMMISSION.

IMPERIAL GRANUM

THIS STANDARD PREPARED

FOOD

IS EARNESTLY RECOMMENDED as a most reliable FOOD for INFANTS, CHILDREN and Nursing-Mothers;—for INVALIDS and Convalescents;—for Delicate and Aged persons. It is not a stimulant nor a chemical preparation; but a PURE, unsweetened FOOD carefully prepared from the finest growths of wheat, ON WHICH PHYSICIANS CAN DEPEND in FEVERS and in all gastric and enteric diseases. It is easily digested, nourishing and strengthening, assists nature, never interferes with the action of the medicines prescribed, and IS OFTEN THE ONLY FOOD THE STOMACH CAN RETAIN.

SEEMS TO HOLD FIRST PLACE IN THE ESTIMATION OF MEDICAL OBSERVERS.—"*The Feeding of Infants*," *in the New York Medical Record.*

A good and well made powder of pleasant flavour. CONTAINS NO TRACE OF ANY IMPURITY.—*The Lancet, London, Eng.*

A valuable aid to the physician in the treatment of all the graver forms of gastric and enteric diseases.—*The Prescription.*

As a food for patients recovering from shock attending surgical operations IMPERIAL GRANUM stands pre-eminent.—*The International Journal of Surgery, New York.*

Not only palatable, but very easily assimilated.—*The Trained Nurse, New York.*

IMPERIAL GRANUM is acceptable to the palate and also to the most delicate stomach at all periods of life.—*Annual of the Universal Medical Sciences, Philadelphia, Penna.*

Highly recommended and endorsed by the best medical authorities in this country.—*North American Practitioner, Chicago, Ills.*

It has acquired a high reputation, and is adapted to children as well as adults—in fact, we have used it successfully with children from birth.—*The Post Graduate Journal.*

The results attending its use have been very satisfactory.— * * * *M.D., in New York State Medical Reporter.*

Especially valuable in fevers, and often the only food the stomach will tolerate in many gastric and enteric diseases.—*Dominion Medical Monthly; Toronto.*

IMPERIAL GRANUM has stood the test of many years, while many competing foods have come and gone, and have been missed by few or none. But it will have satisfactory results in nutrition far into the future, because it is based on merit and proven success in the past.—*The Pharmaceutical Record, N. Y.*

★ 'Physician's-samples' sent free, post-paid, to any physician—or as he may direct. ★

JOHN CARLE & SONS, Wholesale Druggists, 153 Water Street, NEW YORK CITY, N. Y.

CONTENTS—Continued.

HYGIENE FOR THE CHILDREN.

Sunshine as a Disinfectant 423
Chronic Malnutrition of Infants 423
Spasm of The Glottis. 423
Fresh Air for the Children 425
Infantile Diarrhea. 427

NOTES AND COMMENTS.

To the Bicyclist bending forward 429
Tea and Coffee Poison 429
Resuscitation of the Apparently Drowned 430
A Streak of Sense 432
Disinfection of Soiled Linen 432
Danger of Standing Water 431
Hay Fever 433
Removal of Powder Grains 434
Some Overlooked Points in Liver Troubles 435

Liquid Bread...

THE FINEST
MALT EXTRACT
MADE!

IT IS...
AN APPETIZER,
AN UNSURPASSED
TONIC
For INSOMNIA
and INDIGESTION

It is better than Medicine

For Sale by Grocers and Druggists.

DAVID NICHOLSON
Proprietor.
ST. LOUIS

Steel
Ceiling

The Kinnear Ceiling has no equal in either wood, plaster or metal. Is well adapted for use in all classes of buildings. Special designs furnished for Opera Houses, Churches, Halls, Stores, School Houses, etc. Write for prices.

The Kinnear & Gager Co.,
MANUFACTURERS,
238 N. 4th St., COLUMBUS, O.

SUPERIOR TO PEPSIN OF THE HOG

INGLUVIN

A Powder—Prescribed in the same manner, doses and combinations as pepsin.

A SPECIFIC FOR VOMITING IN GESTATION IN DOSES OF 10 to 20 Grains.

Active in both Acid and Alkaline Media.

INGLUVIN IN SPAIN.

The following letter on Ingluvin was recently received from DR. F. VIDAL SOLARES:

"I have to acknowledge duly having received the Ingluvin which you were good enough to send me for the purpose of proving the therapeutic effects of this excellent medicine among my clients.

"The results which I have obtained in my dispensary for sick children, together with my private cases, have been extremely satisfactory. In fact, I have treated various cases of dyspepsia in which the patients, fully prostrated and without power to digest their food, have, thanks to the use of Ingluvin, been rapidly cured.

"In the case of 'apepsia,' or loss of appetite in children, accompanied with diarrhœa, I have obtained good results from the use of Ingluvin, which therapeutic agent is prepared by the house of Warner & Co., from the gizzard of the chicken.

"I have also found Ingluvin useful in the organic complaints of the stomach, and in the indomitable vomiting and painful dyspepsia to which women are subject during pregnancy. I have employed the agent, moreover, in the convalescent state of many patients, when I have not only noted the alteration of the gastric secretions, but of the extreme instability of the stomach.

"I have not the least doubt that the Ingluvin will, in a short time, become a substitute for pepsin on account of its being more active than the latter; but, as is only logical, you should obtain a rapid result by bringing this preparation to be known in all Spain by the opportune measure you usually adopt.

"Wishing you the success which you so fully merit, I am," etc.

For Rheumatism, Dyspepsia, Gout, Gravel, Malaria, Brights and all Kidney Diseases, "The Best Table Water in the market to-day."

CONTENTS.

COMMUNICATIONS.

Some Personal Observations upon Effects of Changes of Climate upon Men and Animals, by Richard Cole Newton, M. D. 437

Food Adulteration and the Pure Food Law. By Dr. Lee K. Fremkel. 443

The Morphine Habit, its causation Treatment, and the Possibility of its Cure, by Dr. S. W. Robertson, of California. 448

EDITORIALS.

Asking Our Advise. 457

MUNICIPAL HYGIENE

London's Many Noises. 459

Dangers of Illuminating Gas. 462

Poisoning by Illuminating Gas 464

Vital Statistics of Large Cities. 466

Public Spitting 467

Pure Water Supply 468

Dangers of Sanitary Neglect at the Water Sheds from which come supplies of City Water. 468

How Diphtheria is often Spread 477

ANTITOXINS—

Diphtheria, Streptococcus

Tetanus and Venomous

We are prepared to furnish any or all of the above-named ANTITOXINS at a moment's notice. They are the products of the Pasteur Laboratories, Paris; whence we receive them by direct and frequent importation, thus insuring their freshness and purity. We also furnish ANTITUBERCLE SERUM, which has now been successfully used by more than 100 American physicians.

Our DIPHTHERIA ANTITOXIN (Roux) is made in two strengths, each vial of 10 c. c. containing 2,000 or 3,000 units, respectively.

Literature or written information cheerfully furnished on request. Please mention this journal,

PASTEUR VACCINE COMPANY, Ltd.
(United States and Canada)
56 Fifth Avenue, CHICAGO.

"WELL PREPARED!! NUTRITIOUS!! EASILY DIGESTED!!"

HIGHEST AWARDS WHEREVER EXHIBITED

THE WORLD'S COLUMBIAN COMMISSION.

IMPERIAL GRANUM

THIS STANDARD PREPARED

FOOD

IS EARNESTLY RECOMMENDED as a most reliable FOOD for INFANTS, CHILDREN and Nursing-Mothers;—for INVALIDS and Convalescents;—for Delicate and Aged persons. It is not a stimulant nor a chemical preparation; but a PURE, unsweetened FOOD carefully prepared from the finest growths of wheat, ON WHICH PHYSICIANS CAN DEPEND in FEVERS and in all gastric and enteric diseases. It is easily digested, nourishing and strengthening, assists nature, never interferes with the action of the medicines prescribed, and IS OFTEN THE ONLY FOOD THE STOMACH CAN RETAIN.

SEEMS TO HOLD FIRST PLACE IN THE ESTIMATION OF MEDICAL OBSERVERS.—"*The Feeding of Infants,*" *in the New York Medical Record.*

A good and well made powder of pleasant flavour. CONTAINS NO TRACE OF ANY IMPURITY.—*The Lancet, London, Eng.*

A valuable aid to the physician in the treatment of all the graver forms of gastric and enteric diseases.—*The Prescription.*

As a food for patients recovering from shock attending surgical operations IMPERIAL GRANUM stands pre-eminent.—*The International Journal of Surgery, New York.*

Not only palatable, but very easily assimilated.—*The Trained Nurse, New York.*

IMPERIAL GRANUM is acceptable to the palate and also to the most delicate stomach at all periods of life.—*Annual of the Universal Medical Sciences, Philadelphia, Penna.*

Highly recommended and endorsed by the best medical authorities in this country.—*North American Practitioner, Chicago, Ills.*

It has acquired a high reputation, and is adapted to children as well as adults—in fact, we have used it successfully with children from birth.—*The Post Graduate Journal.*

The results attending its use have been very satisfactory.— * * * *M.D., in New York State Medical Reporter.*

Especially valuable in fevers, and often the only food the stomach will tolerate in many gastric and enteric diseases.—*Dominion Medical Monthly, Toronto.*

IMPERIAL GRANUM has stood the test of many years, while many competing foods have come and gone, and have been missed by few or none. But it will have satisfactory results in nutrition far into the future, because it is based on merit and proven success in the past.—*The Pharmaceutical Record, N. Y.*

★ 'Physician's-samples' sent free, post-paid, to any physician—or as he may direct. ★

JOHN CARLE & SONS, Wholesale Druggists, 153 Water Street, NEW YORK CITY, N. Y.

CONTENTS—Continued.

HYGIENE IN THE STATE.

The Relation of Impure Water to Disease. 478

HYGIENE OF ATHLETICS AND PHYSICAL EDUCATION.

Exercises. 480
The Lessons Taught by the College Boat Race. 481
Infantile Athletics. 485

NOTES AND COMMENTS.

On the Practical Bearing of Washing out the Stomachs in Infants. 486
It is a Mistake 487
Effect of Age upon the Eyes 487
Operation for Idiopathic Insanity. 488
How Sanitary Matters are Managed in England. 488
Rest for the Heart. 490
Antifat Patient. 490

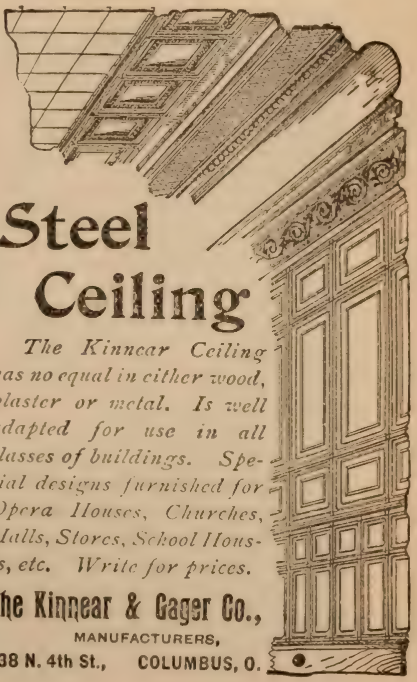
Liquid Bread...

THE FINEST
MALT EXTRACT
MADE!

IT IS...
AN APPETIZER,
AN UNSURPASSED
TONIC
For INSOMNIA
and INDIGESTION
It is better than Medicine

For Sale by Grocers and Druggists.

DAVID NICHOLSON
Proprietor.
ST. LOUIS



Steel
Ceiling

The Kinnear Ceiling has no equal in either wood, plaster or metal. Is well adapted for use in all classes of buildings. Special designs furnished for Opera Houses, Churches, Halls, Stores, School Houses, etc. Write for prices.

The Kinnear & Gager Co.,
MANUFACTURERS,
238 N. 4th St., COLUMBUS, O.

INGLUVIN

A powder used with superior results in all cases where pepsin may be indicated

A Specific for Vomiting in Pregnancy

Dose—5 to 20 grains

Prepared from Powdered Gizzard of the Chicken

Warner's Soluble Pills

PIL. ARTHROSIA

(Wm. R. Warner & Co.)

For cure of Rheumatism and Rheumatic Gout

Formula—Acidum Salicylicum, Resina, Podophyllum, Quinia, Ext. Colchicum, Ext. Phytolacca, Capsicum.

Almost a specific in Rheumatic and Gouty affections. Per 100, 60c.

Pil. Sumbul Aperient

(Dr. Shoemaker)

Med. prop.—Nerve tonic, Aperient.

Ext. Sumbul, 1 gr. Asafetida, 1 gr.
Ext. Nuc. Vom. ⅛ gr. Aloin, ¼ gr.
Ext. Cascar. Sag. ½ gr. Ginger'e ¼ gr

Dose—1 to 2 pills. Per 100, $1.00

Wm. R. Warner & Co.

1228 Market St., Phila.
52 Maiden Lane, New York
197 Randolph St , Chicago

Pil. Cascara Cathartic

Warner & Co. Dr. Hinkle

Each containing

Cascarin, ¼ gr. Belladonna, ⅛ gr.
Aloin, aa ¼ gr. Strychnine, 1-60 gr.
Podophyl, ⅙ gr. Gingerine, ⅛ gr.

Dose—1 to 2 pills.

PIL. SUMBUL COMP.

(Wm. R. Warner & Co.)

Ext. Sumbul, 1 gr. Ferri Sulph, Exs. 1 gr.
Asafetida, 2 grs. Ac. Arsenious, 1-40 gr.

Dr. Goodell—"I use this pill for nervous and hysterical women who need building up."

This pill is used with advantage in neurasthenic conditions in conjunction with Warner & Co.'s Bromo Soda, one or two pills taken three times a day. Per 100, $1.00

LITHIA TABLETS

(Wm. R. Warner & Co.)

Afford a rational intelligent method of administering LITHIA as indicated in

RHEUMATISM, RENAL DISEASES ETC., ETC.

For Rheumatism, Dyspepsia, Gout, Gravel, Malaria, Brights and all Kidney Diseases, "The Best Table Water in the market to-day."

CONTENTS.

COMMUNICATIONS.

Personal Purity. Addresses to Men in St. Peter's Church, Baltimore, by Howard A. Kelly, M.D., Johns Hopkins Hospital. Mrs. Kate Barrett, New York. 491
Venereal Diseases in British Troops in India 501
Venereal Diseases in the British Army 502
The Importance and Good Results of Circumcision, by Mark O'Donnell, M.D 503
Venereal Infection 504
Anti-Vivisectionists and the Degenerate 505
Some Personal Observations upon the Effects of Changes of Climate upon Men and Animals, by Richard Cole Newton, M.D. 507
The Cold Tub 513

MUNICIPAL HYGIENE.

London's Many Noises 514
Dietetics 517

HYGIENE FOR THE CHILDREN.

Constipation in Young Children 518
Effects of Cigarette Smoke upon Children and Youth 522
Convulsions in Infants and Children 524

ANTITOXINS—

Diphtheria, Streptococcus

Tetanus and Venomous

We are prepared to furnish any or all of the above-named ANTITOXINS at a moment's notice. They are the products of the Pasteur Laboratories, Paris; whence we receive them by direct and frequent importation, thus insuring their freshness and purity. We also furnish ANTITUBERCLE SERUM, which has now been successfully used by more than 100 American physicians.

Our DIPHTHERIA ANTITOXIN (Roux) is made in two strengths, each vial of 10 c.c. containing 2,000 or 3,000 units, respectively.

Literature or written information cheerfully furnished on request. Please mention this journal.

PASTEUR VACCINE COMPANY, Ltd.
(United States and Canada)
56 Fifth Avenue, CHICAGO.

"WELL PREPARED!! NUTRITIOUS!! EASILY DIGESTED!!"

HIGHEST AWARDS WHEREVER EXHIBITED.

THE WORLD'S COLUMBIAN COMMISSION.

IMPERIAL GRANUM

THIS STANDARD PREPARED

FOOD

IS EARNESTLY RECOMMENDED as a most reliable FOOD for INFANTS, CHILDREN and Nursing-Mothers;—for INVALIDS and Convalescents;—for Delicate and Aged persons. It is not a stimulant nor a chemical preparation; but a PURE, unsweetened FOOD carefully prepared from the finest growths of wheat, ON WHICH PHYSICIANS CAN DEPEND in FEVERS and in all gastric and enteric diseases. It is easily digested, nourishing and strengthening, assists nature, never interferes with the action of the medicines prescribed, and IS OFTEN THE ONLY FOOD THE STOMACH CAN RETAIN.

SEEMS TO HOLD FIRST PLACE IN THE ESTIMATION OF MEDICAL OBSERVERS.—"*The Feeding of Infants,*" *in the New York Medical Record.*

A good and well made powder of pleasant flavour. CONTAINS NO TRACE OF ANY IMPURITY.—*The Lancet, London, Eng.*

A valuable aid to the physician in the treatment of all the graver forms of gastric and enteric diseases.—*The Prescription.*

As a food for patients recovering from shock attending surgical operations IMPERIAL GRANUM stands pre-eminent.—*The International Journal of Surgery, New York.*

Not only palatable, but very easily assimilated.—*The Trained Nurse, New York.*

IMPERIAL GRANUM is acceptable to the palate and also to the most delicate stomach at all periods of life.—*Annual of the Universal Medical Sciences, Philadelphia, Penna.*

Highly recommended and endorsed by the best medical authorities in this country.—*North American Practitioner, Chicago, Ills.*

It has acquired a high reputation, and is adapted to children as well as adults—in fact, we have used it successfully with children from birth.—*The Post Graduate Journal.*

The results attending its use have been very satisfactory.— * * * *M.D., in New York State Medical Reporter.*

Especially valuable in fevers, and often the only food the stomach will tolerate in many gastric and enteric diseases.—*Dominion Medical Monthly, Toronto.*

IMPERIAL GRANUM has stood the test of many years, while many competing foods have come and gone, and have been missed by few or none. But it will have satisfactory results in nutrition far into the future, because it is based on merit and proven success in the past.—*The Pharmaceutical Record, N. Y.*

★ 'Physician's-samples' sent free, post-paid, to any physician—or as he may direct. ★

JOHN CARLE & SONS, Wholesale Druggists, 153 Water Street, NEW YORK CITY, N. Y.

CONTENTS—Continued.

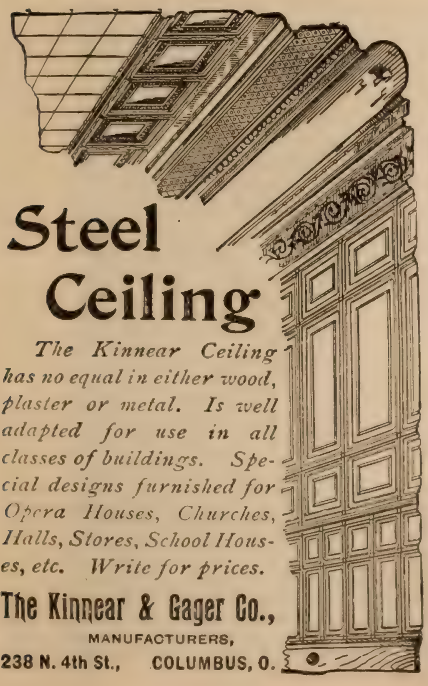
The Uses of Suppositories in Children 526
Punishment 527
Medical Aspect of the Child's Education 527
The Sterilization of Milk, by Kenyon West 529
Nerves 530
The Baby's Bath 531
Children's Playgrounds 532
Some Points in the Treatment of Children's Diseases 533
The Science of the Morning Fast 534
Infantile Diarrhœa and its Treatment by Sterilized Water 535
Some Reflex Disturbances in Children with Reference to Circumcision 535
Significance of the Child's Fontanelle 536

HYGIENE IN ATHLETICS.

Cycling from a Hygienic Point of View 538
The Bicycle and Gynecology 539
To Stand Erect 540
Breathing Through the Mouth 541

NOTES AND COMMENTS.

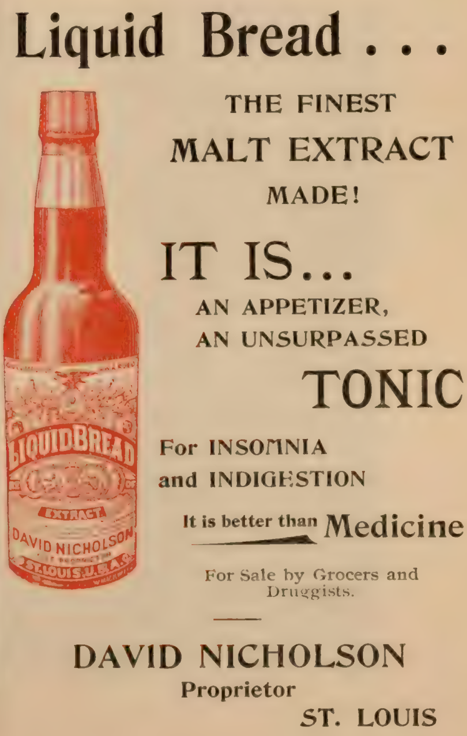
Treatment of Obesity 542
Jenner and the Small-Pox 544
Healthfulness of New York 544



Steel Ceiling

The Kinnear Ceiling has no equal in either wood, plaster or metal. Is well adapted for use in all classes of buildings. Special designs furnished for Opera Houses, Churches, Halls, Stores, School Houses, etc. Write for prices.

The Kinnear & Gager Co.,
MANUFACTURERS,
238 N. 4th St., COLUMBUS, O.



Liquid Bread . . .

THE FINEST
MALT EXTRACT
MADE!

IT IS...
AN APPETIZER,
AN UNSURPASSED
TONIC

For INSOMNIA
and INDIGESTION

It is better than Medicine

For Sale by Grocers and Druggists.

DAVID NICHOLSON
Proprietor
ST. LOUIS

INGLUVIN

A powder used with superior results in all cases where pepsin may be indicated

A SPECIFIC FOR VOMITING IN PREGNANCY

Dose—5 to 20 grains

PREPARED FROM GIZZARD OF THE CHICKEN

Warner's Soluble Pills

PIL. ARTHROSIA

(WM. R. WARNER & CO.)

For cure of Rhematism and Rheumatic Gout

FORMULA—Acidum Salicylicum, Resina, Podophyllum, Quinia, Ext. Colchicum, Ext. Phytolacca, Capsicum.

Almost a specific in Rheumatic and Gouty affections. Per 100, 60c.

Pil. Sumbul Aperient

(DR. SHOEMAKER)

Med. prop.—Nerve tonic, Aperient.

Ext. Sumbul, 1 gr. Asafetida, 1 gr.
Ext. Nuc. Vom., ⅛ gr. Aloin, ¼ gr.
Ext. Cascar. Sag. ½gr. Ginger'e ¼gr.

Dose—1 to 2 pills. Per 100, $1.00.

Wm. R. Warner & Co.

1228 Market St., Phila.
52 Maiden Lane, New York.
197 Randolph St., Chicago.

Pil. Cascara Cathartic

WARNER & CO. DR. HINKLE

Each containing

Cascarin, ¼ gr. Belladonna, ⅛ gr.
Aloin, aa ¼ gr. Strychnine, 1-60 gr.
Podophyl, ⅙ gr. Gingerine, ⅛ gr.

Dose—1 to 2 pills.

PIL. SUMBUL COMP.

(WM. R. WARNER & CO.)

Ext. Sumbul, 1 gr. Ferri Sulph. Exs. 1 gr.
Asafetida, 2 grs. Ac. Arsenious, 1-40 gr.

DR. GOODELL—"I use this pill for nervous and excitable women who need building up."

This pill is used with advantage in neurasthenic conditions in conjunction with Warner & Co.'s Bromo Soda, one or two pills taken three times a day. Per 100, $1.00.

LITHIA TABLETS

(WM. R. WARNER & CO.)

Afford a rational, intelligent method of administering LITHIA as indicated in

RHEUMATISM, RENAL DISEASES, ETC., ETC.

For Rheumatism, Dyspepsia, Gout, Gravel, Malaria, Bright's and all Kidney Diseases. "The Best Table Water in the market to-day."

CONTENTS.

COMMUNICATIONS.

How Shall We Dispose of Our Dead? Read before the Homœopathic Medical Society of the Twenty-third Ward of Philadelphia, November Meeting, 1886. By William C. Powell, M.D., Bryn Mawr, Pa. 545

Transformation of Heredity. By James G. Kiernan, M.D., Chicago, Foreign Associate Member of the French Medico-Psychological Association; Fellow of the Chicago Academy of Medicine; Lecturer on Forensic Psychiatry, Kent College of Law; Member of the American Medical Association 550

An Item on Causation and Prevention of Diseases of Women. By J. Steven Brown, M.D., Salisbury, N.C. Read before the North Carolina Medical Society, June 8, 1897 563

ANTITOXINS—

Diphtheria, Streptococcus

Tetanus and Venomous

We are prepared to furnish any or all of the above-named ANTITOXINS at a moment's notice. They are the products of the Pasteur Laboratories, Paris; whence we receive them by direct and frequent importation, thus insuring their freshness and purity. We also furnish ANTITUBERCLE SERUM, which has now been successfully used by more than 100 American physicians.

Our DIPHTHERIA ANTITOXIN (Roux) is made in two strengths, each vial of 10 c.c. containing 2,000 or 3,000 units, respectively.

Literature or written information cheerfully furnished on request. Please mention this journal.

PASTEUR VACCINE COMPANY, Ltd.
(United States and Canada)
56 Fifth Avenue, CHICAGO.

"WELL PREPARED!! NUTRITIOUS!! EASILY DIGESTED!!"

HIGHEST AWARDS
WHEREVER EXHIBITED

THE WORLD'S COLUMBIAN
COMMISSION.

IMPERIAL GRANUM

THIS
STANDARD PREPARED

FOOD

IS EARNESTLY RECOMMENDED as a most reliable FOOD for INFANTS, CHILDREN and Nursing-Mothers;—for INVALIDS and Convalescents;—for Delicate and Aged persons. It is not a stimulant nor a chemical preparation; but a PURE, unsweetened FOOD carefully prepared from the finest growths of wheat, ON WHICH PHYSICIANS CAN DEPEND in FEVERS and in all gastric and enteric diseases. It is easily digested, nourishing and strengthening, assists nature, never interferes with the action of the medicines prescribed, and IS OFTEN THE ONLY FOOD THE STOMACH CAN RETAIN.

SEEMS TO HOLD FIRST PLACE IN THE ESTIMATION OF MEDICAL OBSERVERS.—"*The Feeding of Infants,*" *in the New York Medical Record.*

A good and well made powder of pleasant flavour. CONTAINS NO TRACE OF ANY IMPURITY.—*The Lancet, London, Eng.*

A valuable aid to the physician in the treatment of all the graver forms of gastric and enteric diseases.—*The Prescription.*

As a food for patients recovering from shock attending surgical operations IMPERIAL GRANUM stands pre-eminent.—*The International Journal of Surgery, New York.*

Not only palatable, but very easily assimilated.—*The Trained Nurse, New York.*

IMPERIAL GRANUM is acceptable to the palate and also to the most delicate stomach at all periods of life.—*Annual of the Universal Medical Sciences, Philadelphia, Penna.*

Highly recommended and endorsed by the best medical authorities in this country.—*North American Practitioner, Chicago, Ills.*

It has acquired a high reputation, and is adapted to children as well as adults—in fact, we have used it successfully with children from birth.—*The Post Graduate Journal.*

The results attending its use have been very satisfactory.— * * * *M.D., in New York State Medical Reporter.*

Especially valuable in fevers, and often the only food the stomach will tolerate in many gastric and enteric diseases.—*Dominion Medical Monthly, Toronto.*

IMPERIAL GRANUM has stood the test of many years, while many competing foods have come and gone, and have been missed by few or none. But it will have satisfactory results in nutrition far into the future, because it is based on merit and proven success in the past.—*The Pharmaceutical Record, N. Y.*

★ **'Physician's-samples' sent free, post-paid, to any physician—or as he may direct.** ★

JOHN CARLE & SONS, Wholesale Druggists, 153 Water Street, NEW YORK CITY, N. Y.

CONTENTS—Continued.

The Influence of School Life Upon the Health of Children. By William W. Johnston, M.D 565

Criminal Abortion: Its Prevalence, Its Prevention, and Its Relation to the Medical Examiner. Based on the "Summary of the Vital Statistics of the New England States for the year 1892," by the six Secretaries of the New England State Boards of Health. By H. R. Storer, M.D., of Newport, R.I. 579

EDITORIAL.

Concerning the ANNALS 591

The American Public Health Association 593

BOOK REVIEWS.

New Books and Reprints Received 594

Tinned Food 595

NOTES AND COMMENTS.

Turkish Baths 596

Public Bath-Houses 598

HOSPITALS PHYSICIANS AND NURSES

We Take the liberty of calling your attention to our

FLOATING-BORAX SOAP

believing that a trial will show you its great value for toilet, bath or laundry use. It is not an imitation of anything, but is better than all other floating soaps, as it is absolutely pure—a necessity for the hospital and sick chamber. We do not aim to follow, but to lead. No doubt you know the value of Borax in the bath or laundry. This soap, and Dobbins' Electric (which latter we have made for the last 30 years and still make), are the only soaps which really contain Borax, although some others claim to contain it, and as Dobbins' Electric stands at the head of the non-floating laundry soaps, so Floating-Borax stands far above all other floating soaps, and is without doubt the best floating soap that can possibly be made. Compare its color and odor with that of any other brand. This will not turn rancid as some others.

We believe that you will be so well pleased with this soap that you will desire to continue its use, in which case please order it of your grocer, and be sure that he gives you what you ask for.

It is the only floating soap whose wrappers are printed in red, hence it is impossble to mistake it for any other. even at a distance. Ask for **DOBBINS' FLOATING-BORAX SOAP** red wrapper.

DOBBINS' SOAP MFG. CO.
PHILADELPHIA.

Liquid Bread . . .

THE FINEST
MALT EXTRACT
MADE!

IT IS...
AN APPETIZER,
AN UNSURPASSED
TONIC

For INSOMNIA
and INDIGESTION

It is better than Medicine

For Sale by Grocers and Druggists.

DAVID NICHOLSON
Proprietor
ST. LOUIS

INGLUVIN

A powder used with superior results in all cases where pepsin may be indicated

A SPECIFIC FOR VOMITING IN PREGNANCY

Dose—5 to 20 grains

PREPARED FROM GIZZARD OF THE CHICKEN

Warner's Soluble Pills

PIL. ARTHROSIA

(WM. R. WARNER & CO.)

For cure of Rhematism and Rheumatic Gout

FORMULA—Acidum Salicylicum, Resina, Podophyllum, Quinia, Ext. Colchicum, Ext. Phytolacca, Capsicum.

Almost a specific in Rheumatic and Gouty affections. Per 100, 60c.

Pil. Sumbul Aperient

(DR. SHOEMAKER)

Med. prop.—Nerve tonic, Aperient.

Ext. Sumbul, 1 gr. Asafetida, 1 gr.
Ext. Nuc. Vom., ⅛ gr. Aloin, ¼ gr.
Ext. Cascar. Sag. ½gr. Ginger'e ¼gr.

Dose—1 to 2 pills. Per 100, $1.00.

Wm. R. Warner & Co.

1228 Market St., Phila.
52 Maiden Lane, New York.
197 Randolph St., Chicago.

Pil. Cascara Cathartic

WARNER & CO. DR. HINKLE

Each containing

Cascarin, ¼ gr. Belladonna, ⅛ gr.
Aloin, aa ¼ gr. Strychnine, 1-60 gr.
Podophyl, ⅙ gr. Gingerine, ⅛ gr.

Dose—1 to 2 pills.

PIL. SUMBUL COMP.

(WM. R. WARNER & CO.)

Ext. Sumbul, 1 gr. Ferri Sulph. Exs. 1 gr.
Asafetida, 2 grs. Ac. Arsenious, 1-40 gr.

DR. GOODELL—"I use this pill for nervous and excitable women who need building up."

This pill is used with advantage in neurasthenic conditions in conjunction with Warner & Co.'s Bromo Soda, one or two pills taken three times a day. Per 100, $1.00.

LITHIA TABLETS

(WM. R. WARNER & CO.)

Afford a rational, intelligent method of administering LITHIA as indicated in

RHEUMATISM, RENAL DISEASES, ETC., ETC.

For Rheumatism, Dyspepsia, Gout, Gravel, Malaria, Bright's and all Kidney Diseases. "The Best Table Water in the market to-day."

CONTENTS.

COMMUNICATIONS.

The Country Slaughter-House as a Factor in the Spread of Disease. By Ch. Wardell Stiles, M.D., Ph.D., Washington, D.C. Zoologist of the Bureau of Animal Industry, U. S. Department of Agriculture 599
Hay Fever. By Edmund W. Holmes, M.D., Philadelphia 612
Calomel as a Curative in Agent Diphtheria. By Leonardo D. Judd, M.D., Philadelphia 622
The Treatment of Gout by Natural Mineral Waters. By Charles C. Ransom, M.D., New York 629
How to Live One Hundred Years. By John Elfreth Watkins, Jr. 634
Syphilis in its Sanitary Aspects. By Edward M. Gramm, M.D., Philadelphia 639

ANTITOXINS—

Diphtheria, Streptococcus
Tetanus and Venomous

We are prepared to furnish any or all of the above-named ANTITOXINS at a moment's notice. They are the products of the Pasteur Laboratories, Paris; whence we receive them by direct and frequent importation, thus insuring their freshness and purity. We also furnish ANTITUBERCLE SERUM, which has now been successfully used by more than 100 American physicians.

Our DIPHTHERIA ANTITOXIN (Roux) is made in two strengths, each vial of 10 c.c. containing 2,000 or 3,000 units, respectively.

Literature or written information cheerfully furnished on request. Please mention this journal.

PASTEUR VACCINE COMPANY, Ltd.
(United States and Canada)
56 Fifth Avenue, CHICAGO.

"WELL PREPARED!! NUTRITIOUS!! EASILY DIGESTED!!"

HIGHEST AWARDS WHEREVER EXHIBITED. THE WORLD'S COLUMBIAN COMMISSION.

IMPERIAL GRANUM

THIS STANDARD PREPARED

FOOD

IS EARNESTLY RECOMMENDED as a most reliable FOOD for INFANTS, CHILDREN and Nursing-Mothers;—for INVALIDS and Convalescents;—for Delicate and Aged persons. It is not a stimulant nor a chemical preparation; but a PURE, unsweetened FOOD carefully prepared from the finest growths of wheat, ON WHICH PHYSICIANS CAN DEPEND in FEVERS and in all gastric and enteric diseases. It is easily digested, nourishing and strengthening, assists nature, never interferes with the action of the medicines prescribed, and IS OFTEN THE ONLY FOOD THE STOMACH CAN RETAIN.

SEEMS TO HOLD FIRST PLACE IN THE ESTIMATION OF MEDICAL OBSERVERS.—"*The Feeding of Infants,*" *in the New York Medical Record.*

A good and well made powder of pleasant flavour. CONTAINS NO TRACE OF ANY IMPURITY.—*The Lancet, London, Eng.*

A valuable aid to the physician in the treatment of all the graver forms of gastric and enteric diseases.—*The Prescription.*

As a food for patients recovering from shock attending surgical operations IMPERIAL GRANUM stands pre-eminent.—*The International Journal of Surgery, New York.*

Not only palatable, but very easily assimilated.—*The Trained Nurse, New York.*

IMPERIAL GRANUM is acceptable to the palate and also to the most delicate stomach at all periods of life.—*Annual of the Universal Medical Sciences, Philadelphia, Penna.*

Highly recommended and endorsed by the best medical authorities in this country.—*North American Practitioner, Chicago, Ills.*

It has acquired a high reputation, and is adapted to children as well as adults—in fact, we have used it successfully with children from birth.—*The Post Graduate Journal.*

The results attending its use have been very satisfactory.— * * * *M.D., in New York State Medical Reporter.*

Especially valuable in fevers, and often the only food the stomach will tolerate in many gastric and enteric diseases.—*Dominion Medical Monthly, Toronto.*

IMPERIAL GRANUM has stood the test of many years, while many competing foods have come and gone, and have been missed by few or none. But it will have satisfactory results in nutrition far into the future, because it is based on merit and proven success in the past.—*The Pharmaceutical Record, N. Y.*

★ 'Physician's-samples' sent free, post [illegible] ny physician—or as he may direct. ★

JOHN CARLE & SONS, Wholesale Druggists, 153 Water Street, NEW YORK CITY, N. Y.

CONTENTS—Continued.

Hypnotism—A Study of its Claims and Phenomena. By James U. Barnhill, A.M., M.D., Columbus, Ohio. Professor of Nervous and Mental Diseases, Ohio Medical University; Neurologist to Protestant Hospital; Physician to the Hospital for Women 643

EDITORIAL.

On Advertising 646

NOTES AND COMMENTS.

The Physician and Morals 649
Bicycling for Women 650
What Ought Midwives to be Taught? 652
The Civil Responsibility of Sexual Perverts 652

HOSPITALS PHYSICIANS AND NURSES

We Take the liberty of calling your attention to our

FLOATING-BORAX SOAP

believing that a trial will show you its great value for toilet, bath or laundry use. It is not an imitation of anything, but is better than all other floating soaps, as it is absolutely pure—a necessity for the hospital and sick chamber. We do not aim to follow, but to lead. No doubt you know the value of Borax in the bath or laundry. This soap, and Dobbins' Electric (which latter we have made for the last 30 years and still make), are the only soaps which really contain Borax, although some others claim to contain it, and as Dobbins' Electric stands at the head of the non-floating laundry soaps, so Floating-Borax stands far above all other floating soaps, and is without doubt the best floating soap that can possibly be made. Compare its color and odor with that of any other brand. This will not turn rancid as some others.

We believe that you will be so well pleased with this soap that you will desire to continue its use, in which case please order it of your grocer, and be sure that he gives you what you ask for.

It is the only floating soap whose wrappers are printed in red, hence it is impossble to mistake it for any other, even at a distance. Ask for **DOBBINS' FLOATING-BORAX SOAP** red wrapper.

DOBBINS' SOAP MFG. CO.
PHILADELPHIA

Liquid Bread . . .

THE FINEST
MALT EXTRACT
MADE!

IT IS...
AN APPETIZER,
AN UNSURPASSED
TONIC

For INSOMNIA
and INDIGESTION

It is better than **Medicine**

For Sale by Grocers and Druggists.

DAVID NICHOLSON
Proprietor
ST. LOUIS

ANIPA

NATURE'S WONDERFUL TONIC

For Blood and Skin Diseases, Debility, Ulcers, Syphilis and Gonorrhœa.

For Liver and Urinary Troubles, Piles and Female Complaints.

A Natural Aciduous Mineral Water

ANALYSIS

Phosphates		Heavy traces
Chlorine as Chlorides	4.101	grains
Carbonate of Iron	70.03	"
" " Calcium	41.00	"
" " Sodium	1.86	"
" " Lithium	8.3	"
" " Stronthium		Trace
" " Magnesium	3.02	grains
Sulphate of Potassium	1.47	"
" " Sodium	1.34	"
Chloride " "	3.81	"
Sulphate of Magnesium	2.01	"
" " Alumina		Trace
" " Silicia	1.01	grains
" " Iron	2.31	"

Per U.S. gallon of 231 cubic inches

ANIPA contains also, sulphuretted hydrogen and carbonic acid gas, which add greatly to its medical properties.

THE DOSE is from half a teaspoonful to a tablespoonful in eight times the quantity of water. Making a cheap but reliable Medicine.

Anipa Mineral Water Co.

231 Dock St., Philadelphia, Pa.

Will keep Full Strength for any length of time in any Climate.

Price, $1.00 per Bottle